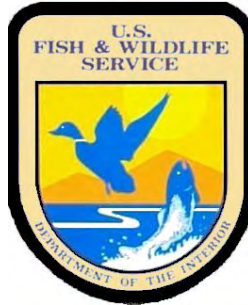


# **The Road Inventory of Lee Metcalf National Wildlife Refuge Stevensville, MT**



Prepared By:  
Federal Highway Administration  
Central Federal Lands Highway Division  
August 2008



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## INTRODUCTION

The Transportation Equity Act for the 21<sup>st</sup> Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

- (a) Maintenance and improvements of refuge roads.
- (b) Maintenance and improvements of:
  - (1) Adjacent vehicle parking areas
  - (2) Provision for pedestrians and bicycles and
  - (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
- (c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

- (a) The comprehensive conservation plan for each refuge;
- (b) The need for access as identified through land use planning; and
- (c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads and parking lots. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22<sup>nd</sup> Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

Native Surfaced roads and parking lots already inventoried will not be re-inventoried and will not appear individually in report chapters 5, 6 and 8. Mileages and areas of native surfaced roads and parking lots will still appear in all summaries in the report and will remain in the road inventory database. In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

# Lee Metcalf

## Summaries

### Route Miles and Percentages by Functional Class and Condition

F. C.	Condition Rating (Based on RSL)*										TOTAL MILES
	Excellent		Good		Fair		Poor		Failed		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
I	0.23	100%									0.23
II			0.12	100%							0.12
III											
IV	0.6	89.7%	0.07	10.3%							0.67
V	2.46	16.1%	10.06	65.8%	2.77	18.1%					15.29
Totals	3.28	20.1%	10.25	63%	2.77	17.0%					16.31

\*For a description of condition ratings for the various surface types see the Appendix.

### Route Miles and Percentages by Surface Type and Condition

S. T.	Paved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (19-20)		Good (13-18)		Fair (7-12)		Poor (1-6)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
AS	0.110984	100.0%									0.11
CO											
Totals	0.11	100%									0.11

S. T.	Unpaved Condition Rating [Condition(RSL)]										TOTAL MILES
	Excellent (8-10)		Good (5-7)		Fair (3-4)		Poor (1-2)		Failed (0)		
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
GR	2.58	25.8%	7.28	72.6%	0.17	1.7%					10.04
NA	0.59	9.5%	2.97	48.2%	2.60	42.3%					6.16
PR											
Totals	3.17	19.6%	10.25	63.3%	2.77	17.1%					16.19

### Square Footage (Parking Areas)

S. T.	Condition Rating										Total Square Feet
	Excellent		Good		Fair		Poor		Failed		
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	
AS	4751	75.5%	1539	24.5%							6290
CO											
GR			64822	53.8%	55642	46.2%					120464
NA					8657	17.4%	40985	82.6%			49642
PR											
Totals	4751	2.7%	66361	37.6%	64299	36.5%	40985	23.2%			176396

# Lee Metcalf

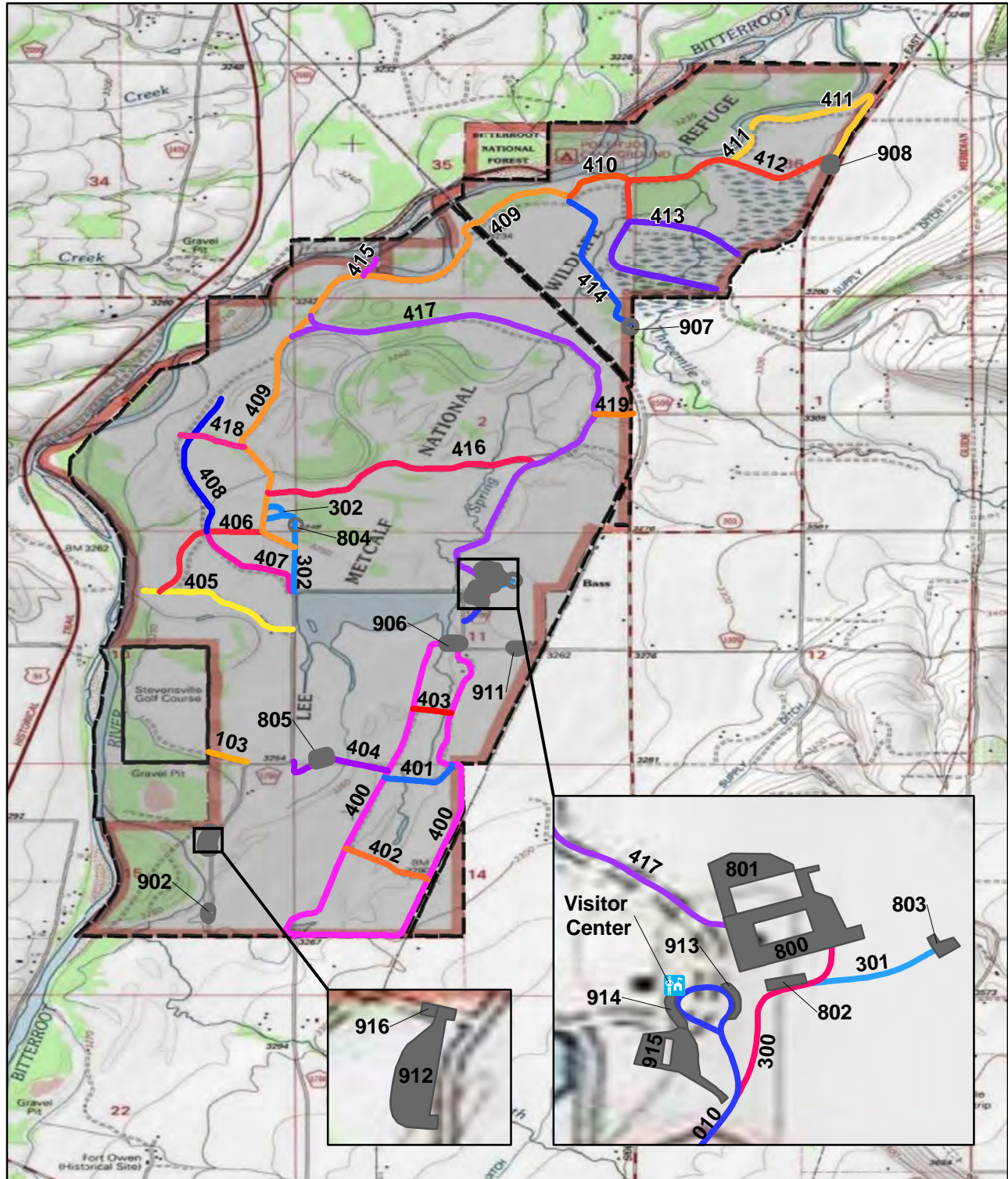
## Summaries

### Route Miles and Percentages by Use Type and Condition

USE TYPE	Road Condition Rating: Public/Administrative Use										TOTAL MILES	PERCENT TOTAL MILES
	Excellent		Good		Fair		Poor		Failed			
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%		
Public (FC I-III)	0.23	65.2%	0.12	35%							.34	2%
Admin (FC IV-V)	3.06	19.2%	10.13	63.5%	2.77	17.4%					15.96	98%
Totals	3.28	20.1%	10.25	63%	2.77	17.0%					16.31	

USE TYPE	Parking Condition Rating										Total Square Feet	PERCENT TOTAL SF
	Excellent		Good		Fair		Poor		Failed			
	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%	Square Feet	%		
Public	4751	5.3%	20983	23.3%	64299	71.4%					90033	51%
Admin			45378	53%			40985	47.5%			86363	49%
Totals	4751	2.7%	66361	37.6%	64299	36.5%	40985	23.2%			176396	

# LEE METCALF NATIONAL WILDLIFE REFUGE ROUTE LOCATION MAP





## Lee Metcalf - 61560 - ROUTE IDENTIFICATION LIST (NUMERIC)

Shading Color Key:

White = Paved Routes
Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
010	-	HQ/VC Entrance Road	0.23	From Wildfowl Lane to end of loop	0.11	0.11	2	1
103	-	Whitetail Golf Course Access Road	0.12	From Wildfowl Lane to end of route	-	0.12	1	2
300	10026628	Shop Road	0.11	From HQ/VC to Shop Parking (Route 800)	-	0.11	2	4
301	10026628	Bunkhouse Road	0.06	From Shop Road (Route 300) to Bunkhouse Parking (Route 803)	-	0.06	1	4
302	10026628	Residence Area Access Road	0.50	From Wildfowl Lane to Pools 7/9 North Slough Road (Route 409)	-	0.50	2	4
400	10026628	Pools 1-4 Perimeter Road	3.15	From Wildfowl Lane to end of loop around pools 1-4	-	3.15	1	5
401	10026628	Pools 2-3 Access Road	0.25	From Pools 1-4 Perimeter Road (Route 400 ) to Pools 1-4 Perimeter Road (Route 400 ) between pools 2 and 3	-	0.25	1	5
402	10026628	Pools 1-2 Access Road	0.28	From Pools 1-4 Perimeter Road (Route 400 ) to Pools 1-4 Perimeter Road (Route 400 ) between pools 1 and 2	-	0.28	1	5
403	10026628	Pools 3-4 Access Road	0.12	From Pools 1-4 Perimeter Road (Route 400 ) to Pools 1-4 Perimeter Road (Route 400 ) between pools 3 and 4	-	0.12	1	5
404	10037271	Pool 2A Access Road	0.35	From Wildfowl Lane to Pools 1-4 Perimeter Road (Route 400)	-	0.35	1	5
405	10037272	Barn Slough Road	0.51	From Wildfowl Lane to end of route at river	-	0.51	1	5
406	10026628	Pool D Road	0.48	From Barn Slough Road (Route 405) to Pools 7/9/North Slough Road (Route 409)	-	0.48	1	5
407	10026628	Pool A Road	0.41	From Wildfowl Lane to West Pools 7/9 Access Road (Route 408)	-	0.41	1	5
408	10026628	West Pools 7/9 Access Road	0.62	From Pool D Road (Route 406) to end of route at river washout	-	0.62	1	5
409	10026628	North Slough Access Road	2.23	From Residence Area Road (Route 302) to North Refuge River Access 2 (Route 410)	-	2.23	1	5
410	10026628	North Refuge River Access 2	0.25	From Otter Pond Road (Route 410) to Pond 12 Road (Route 412)	-	0.25	1	5
411	10026633	Pond 13 Road	0.82	From Pond 12 Road (Route 12) to Pond 12 Road (Route 12)- wash out in center before section 002	-	0.82	1	5
412	10026628	Pond 12 Road	0.86	From Eastside Highway (State Highway 203) to Pond 11 Road (Route 413)	-	0.86	1	5
413	10026628	Pond 11 Road	0.88	From base of hill near refuge boundary to mower turnaround SE of pond 11	-	0.88	1	5
414	10026628	Otter Pond Road	0.62	From North Refuge River Access 2 (Route 410) to North Rathbun Hunter/Waterfowl Access Parking	-	0.62	1	5
415	10026628	North Refuge River Access 1	0.08	From Pools 7/9/North Slough Road to end of route at river	-	0.08	1	5
416	10026628	North Pool 8 Road	0.87	From Pools 7/9/North Slough Road to Pools 8/10 Road (Route 417)	-	0.87	1	5
417	10026628	Pools 8/10 Access Road	2.19	From Shop Parking (Route 800) to Pools 7/9/North Slough Road (Route 409)	-	2.19	1	5
418	10026628	Pools 7/9 Cut Across Access Road	0.20	From Pools 7/9/North Slough Road (Route 409) to end of route	-	0.20	1	5

# **Lee Metcalf - 61560 - ROUTE IDENTIFICATION LIST (NUMERIC)**

Shading Color Key:

White = Paved Routes
Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
419	10026628	East Refuge Access Road	0.12	From Pools 8/10 Road (Route 417) to Rathbun Lane	-	0.12	1	5



## Lee Metcalf - 61560 - ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:

Green = Unpaved Parking Lots

Blue = Paved Parking Lots

RTE #	ASSET NUMBER	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UN-PAVED SQFT
800	10037370	Shop Parking	39042		-	39042
801	10037370	Rear Shop Parking	17082		-	17082
802	10054144	Employee Parking	2805		-	2805
803	10054145	Bunkhouse Parking	2657		-	2657
804		Residence Area Parking	874		-	874
805	10037262	Wildfowl Lane Parking	23903		-	23903
902	10037263	Salish Interpretive Parking Area	3143		-	3143
906	10037267	North Hunter/Waterfowl Access Parking	14074		-	14074
907	10037268	North Rathbun Hunter/Waterfowl Access Parking	4241		-	4241
908	10037269	Eastside Highway Access Parking	7382		-	7382
911		South Wildfowl Lane Parking	4416		-	4416
912	10026647	Wildlife Viewing Area Parking	34186		-	34186
913	10054142	HQ/VC Parking	1967		1967	-
914	10054142	HQ/VC Parking - West	2784		2784	-
915	10054143	HQ/VC Gravel Parking	16301		-	16301
916	10037273	Wildlife Viewing Area Handicap Parking	1539		1539	-

**CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT  
LEE METCALF NWR - 61560**

Routes added to previous inventory:				
	Rte #	Rte Name		
1.	010	HQ/VC Entrance Road	Rte ID:	
			Reason for Addition:	Recently constructed road
5.	300	Shop Road	Rte ID:	
			Reason for Addition:	Admin Road
9.	301	Bunkhouse Road	Rte ID:	
			Reason for Addition:	Admin Road
21.	302	Residence Area Road	Rte ID:	
			Reason for Addition:	Admin Road
11.	400	Pools 1-4 Perimeter Road	Rte ID:	
			Reason for Addition:	Admin Road
12.	401	Pools 2-3 Access Road	Rte ID:	
			Reason for Addition:	Admin Road
13.	402	Pools 1-2 Access Road	Rte ID:	
			Reason for Addition:	Admin Road
14.	403	Pools 3-4 Access Road	Rte ID:	
			Reason for Addition:	Admin Road
15.	404	Pool 2A Access Road	Rte ID:	
			Reason for Addition:	Admin Road
17.	405	Barn Slough Road	Rte ID:	
			Reason for Addition:	Admin Road
18.	406	Pool D Road	Rte ID:	
			Reason for Addition:	Admin Road
19.	407	Pool A Road	Rte ID:	
			Reason for Addition:	Admin Road
20.	408	Pools 7/9 West Access Road	Rte ID:	
			Reason for Addition:	Admin Road
22.	409	Pools 7/9/North Slough Road	Rte ID:	
			Reason for Addition:	Admin Road
23.	410	North Refuge River Access 2	Rte ID:	
			Reason for Addition:	Admin Road
24.	411	Pond 13 Road	Rte ID:	
			Reason for Addition:	Admin Road
25.	412	Pond 12 Road	Rte ID:	
			Reason for Addition:	Admin Road
26.	413	Pond 11 Road	Rte ID:	
			Reason for Addition:	Admin Road
27.	414	Otter Pond Road	Rte ID:	
			Reason for Addition:	Admin Road
28.	415	North Refuge River Access 1	Rte ID:	
			Reason for Addition:	Admin Road
29.	416	Pool 8 North Road	Rte ID:	
			Reason for Addition:	Admin Road
30.	417	Pools 8/10 Road	Rte ID:	
			Reason for Addition:	Admin Road
6.	800	Shop Parking	Rte ID:	
			Reason for Addition:	Admin Road

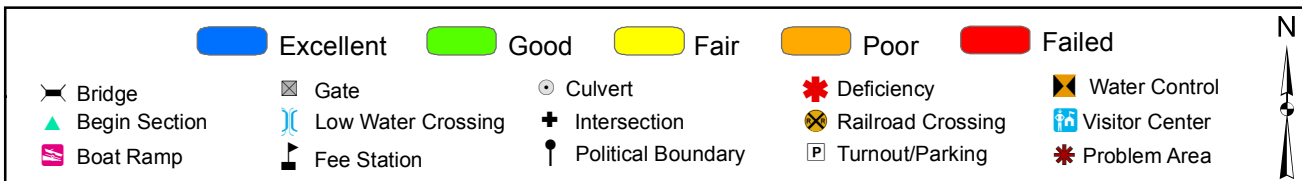
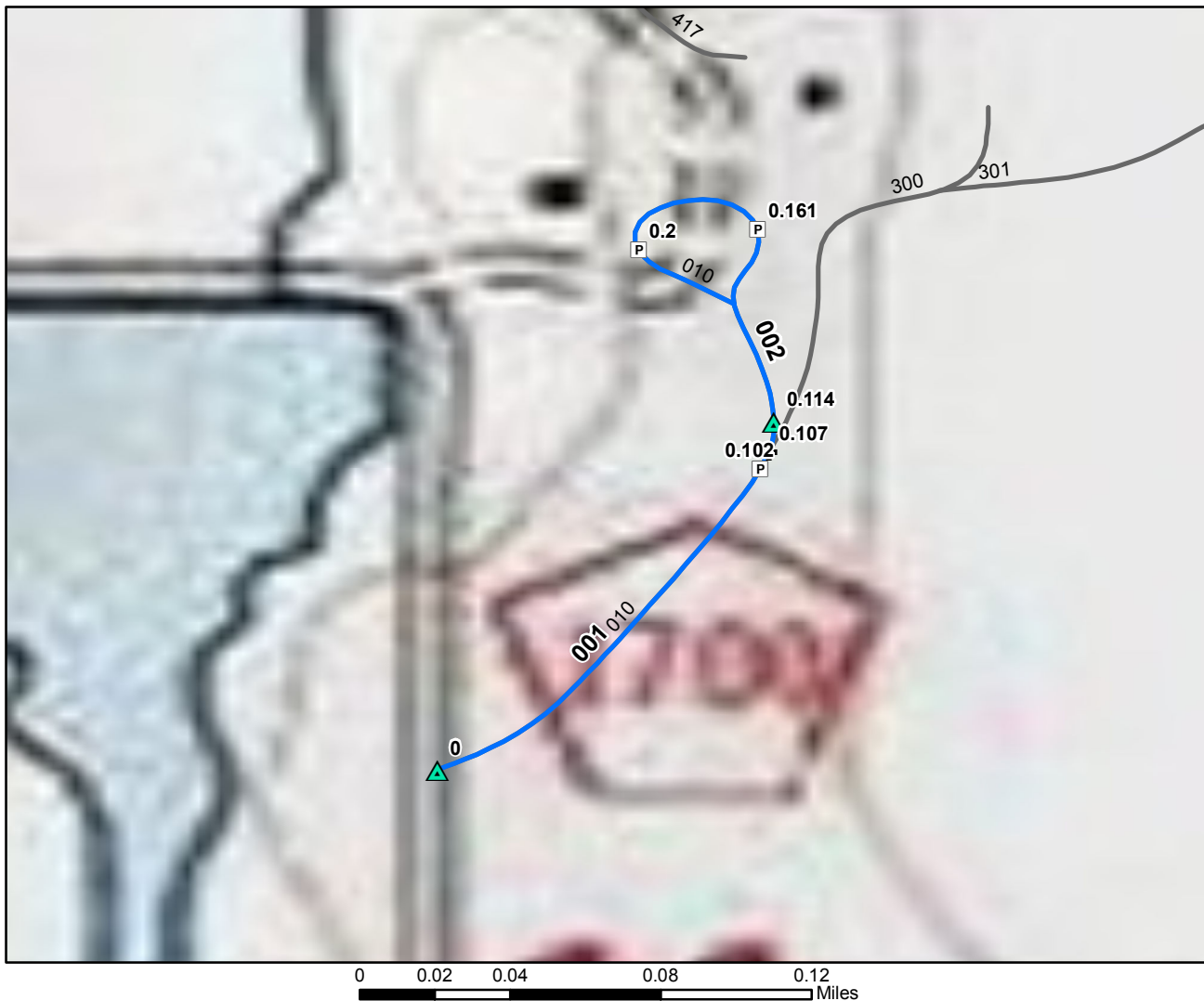
**CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT  
LEE METCALF NWR - 61560**

Routes added to previous inventory:				
7.	801	Rear Shop Parking	Rte ID:	
			Reason for Addition:	Admin Road
8.	802	Employee Parking	Rte ID:	
			Reason for Addition:	Admin Road
10.	803	Bunkhouse Parking	Rte ID:	
			Reason for Addition:	Admin Road
23.	410	North Refuge River Access 2	Rte ID:	
			Reason for Addition:	Admin Road
24.	411	Pond 13 Road	Rte ID:	
			Reason for Addition:	Admin Road
25.	412	Pond 12 Road	Rte ID:	
			Reason for Addition:	Admin Road
26.	413	Pond 11 Road	Rte ID:	
			Reason for Addition:	Admin Road
27.	414	Otter Pond Road	Rte ID:	
			Reason for Addition:	Admin Road
28.	415	North Refuge River Access 1	Rte ID:	
			Reason for Addition:	Admin Road
29.	416	Pool 8 North Road	Rte ID:	
			Reason for Addition:	Admin Road
30.	417	Pools 8/10 Road	Rte ID:	
			Reason for Addition:	Admin Road
2.	913	HQ/VC Parking - East	Rte ID:	
			Reason for Addition:	Recently constructed road
3.	914	HQ/VC Parking - West	Rte ID:	
			Reason for Addition:	Recently constructed road
4.	915	HQ/VC Gravel Parking	Rte ID:	
			Reason for Addition:	Recently constructed road
16.	916	Wildlife Viewing Area Handicap Parking	Rte ID:	
			Reason for Addition:	Recently constructed road
31.			Rte ID:	
			Reason for Addition:	
32.			Rte ID:	
			Reason for Addition:	
33.			Rte ID:	
			Reason for Addition:	
Routes removed from previous inventory:				
	Rte #	Rte Name		
4.	101	The "Path"	Rte ID:	
			Reason for Removal:	Closed/Decomissioned
5.	102	Environmental Education Site Access Rd	Rte ID:	
			Reason for Removal:	Other
1.	104	Waterfowl Hunting Access	Rte ID:	
			Reason for Removal:	Closed/Decomissioned
3.	901	S. Picnic Area Parking	Rte ID:	
			Reason for Removal:	Closed/Decomissioned

**CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT  
LEE METCALF NWR - 61560**

Routes added to previous inventory:				
2.	903	Nature Trails Parking	Rte ID:	
			Reason for Removal:	Closed/Decomissioned
5.	910	New HQ Parking	Rte ID:	
			Reason for Removal:	Other

Routes modified from previous inventory:				
	Rte #	Rte Name		
1.	912	Nature Trails Parking	Rte ID:	
			Modification:	Change name to "Wildlife Viewing Area Parking"
2.	102		Rte ID:	
			Modification:	
3.			Rte ID:	
			Modification:	



Route: 010 HQ/VC Entrance Road

Total Route Length: 0.23 Miles

Route Description: From Wildfowl Lane to end of loop

Asset Number	-	-			
Section Number	001	002			
Section Length (miles)	0.11	0.12			
Inspection Date	08/27/2008	08/28/2008			
<b>Section Information</b>					
Surface Type	Gravel	Asphalt			
Number of Lanes	2	2			
Roadway Width (feet)	28	18			
<b>Roadway Condition Information</b>					
Condition	Excellent	Excellent			
Remaining Service Life (years)	10	20			
Cost Estimate	0	0			
CRV	76,700.00	129,400.00			



Excellent

Good

Fair

Poor

Failed

Bridge

Gate

Culvert

Deficiency

Water Control

Begin Section

Low Water Crossing

Intersection

Railroad Crossing

Visitor Center

Boat Ramp

Fee Station

Political Boundary

Turnout/Parking

Problem Area

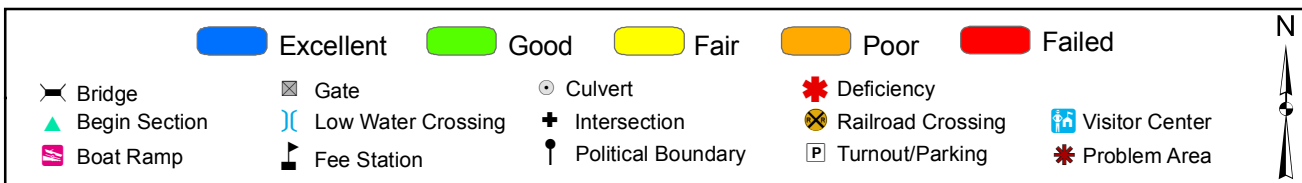
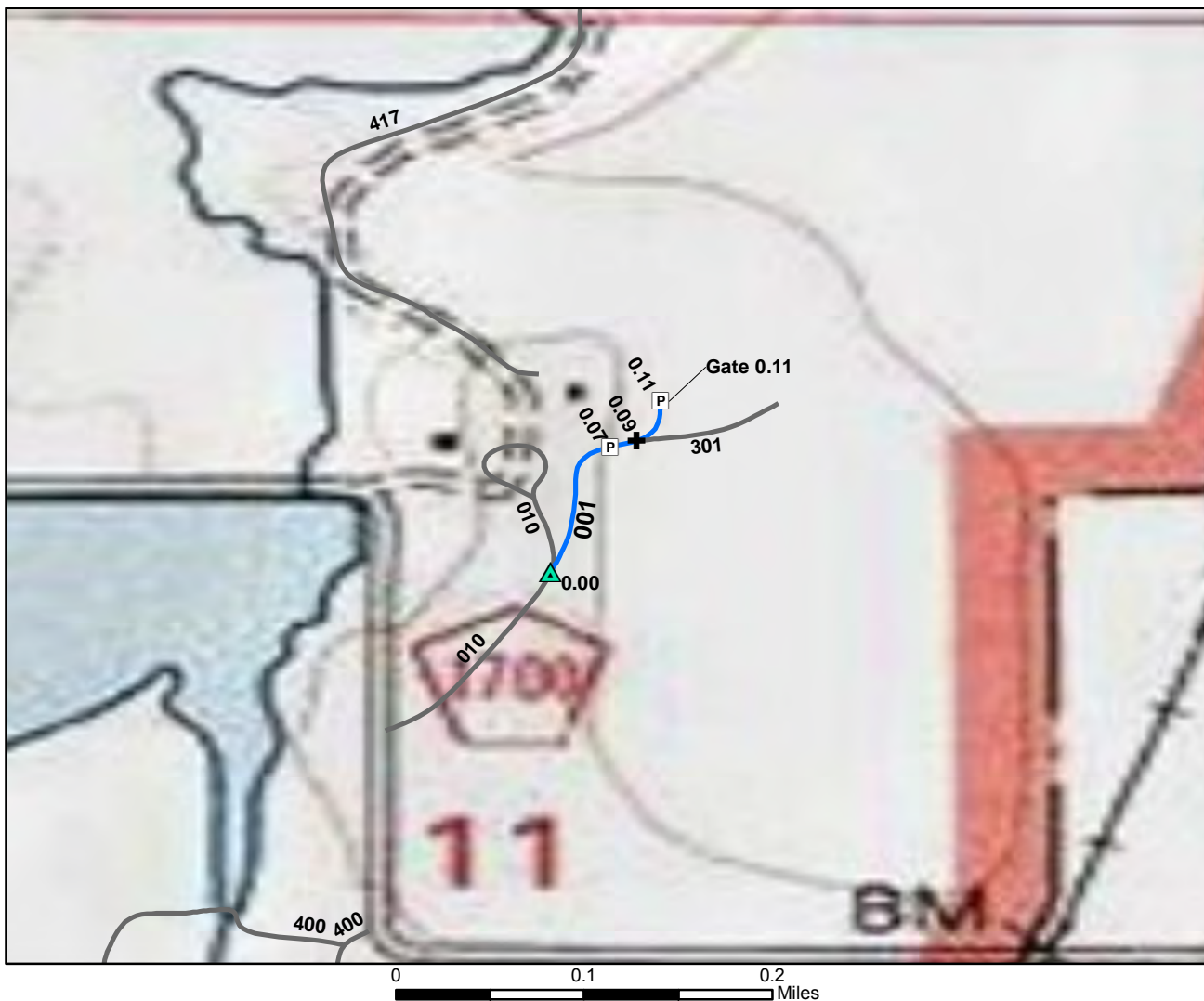
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Route: 010 Whitetail Golf Course Access Road

Total Route Length: 0.12 Miles

Route Description: From Wildfowl Lane to end of loop

Asset Number	-				
Section Number	001				
Section Length (miles)	0.12				
Inspection Date	06/16/2004				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	200				
CRV	80,600.00				



ROUTE: 300 Shop Road

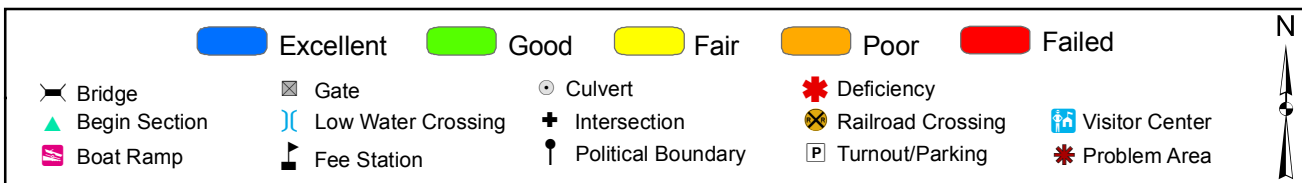
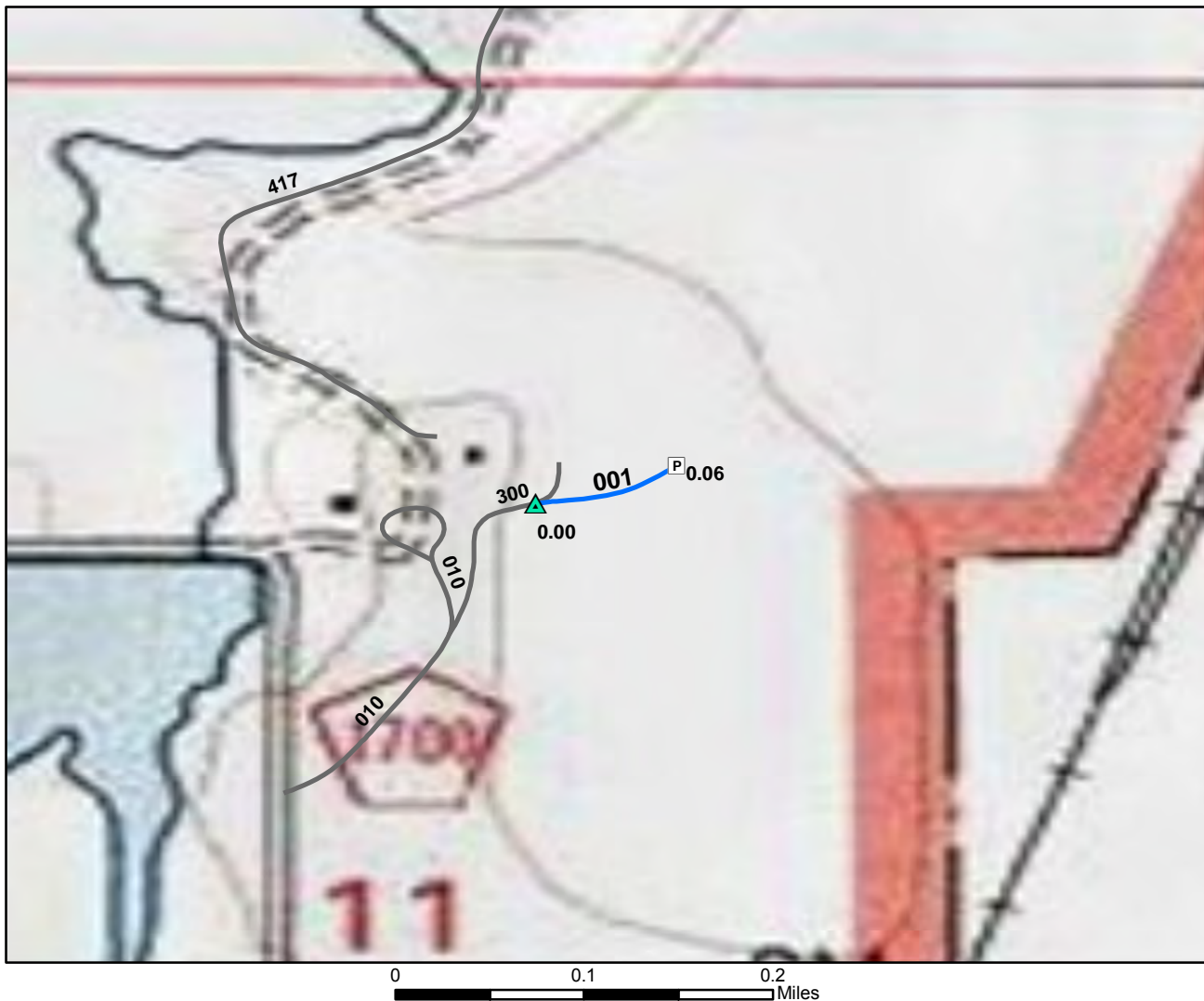
TOTAL LENGTH: 0.11 Miles

ASSET: 10026628

RTE DESCRIPTION: From HQ/VC to Shop Parking (Route 800)

Section Number	001				
Section Length (miles)	0.11				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	2				
Roadway Width (feet)	16				
<b>Roadway Condition Information</b>					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	\$0				
CRV	\$73600				





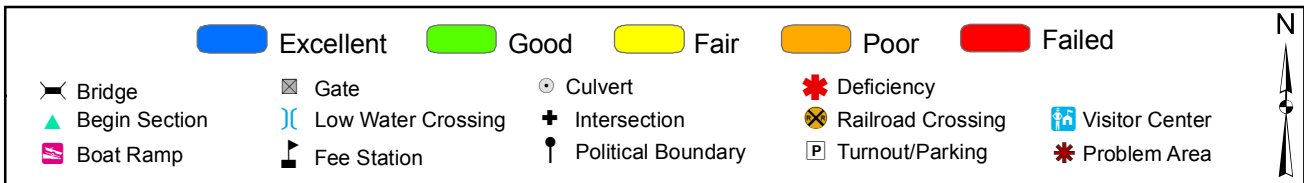
ROUTE: 301 Bunkhouse Road

TOTAL LENGTH: 0.06 Miles

ASSET: 10026628

RTE DESCRIPTION: From Shop Road (Route 300) to Bunkhouse Parking (Route 803)

Section Number	001				
Section Length (miles)	0.06				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
<b>Roadway Condition Information</b>					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	\$0				
CRV	\$38400				

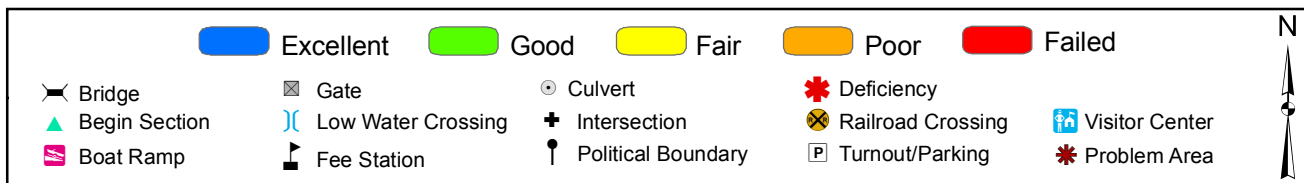
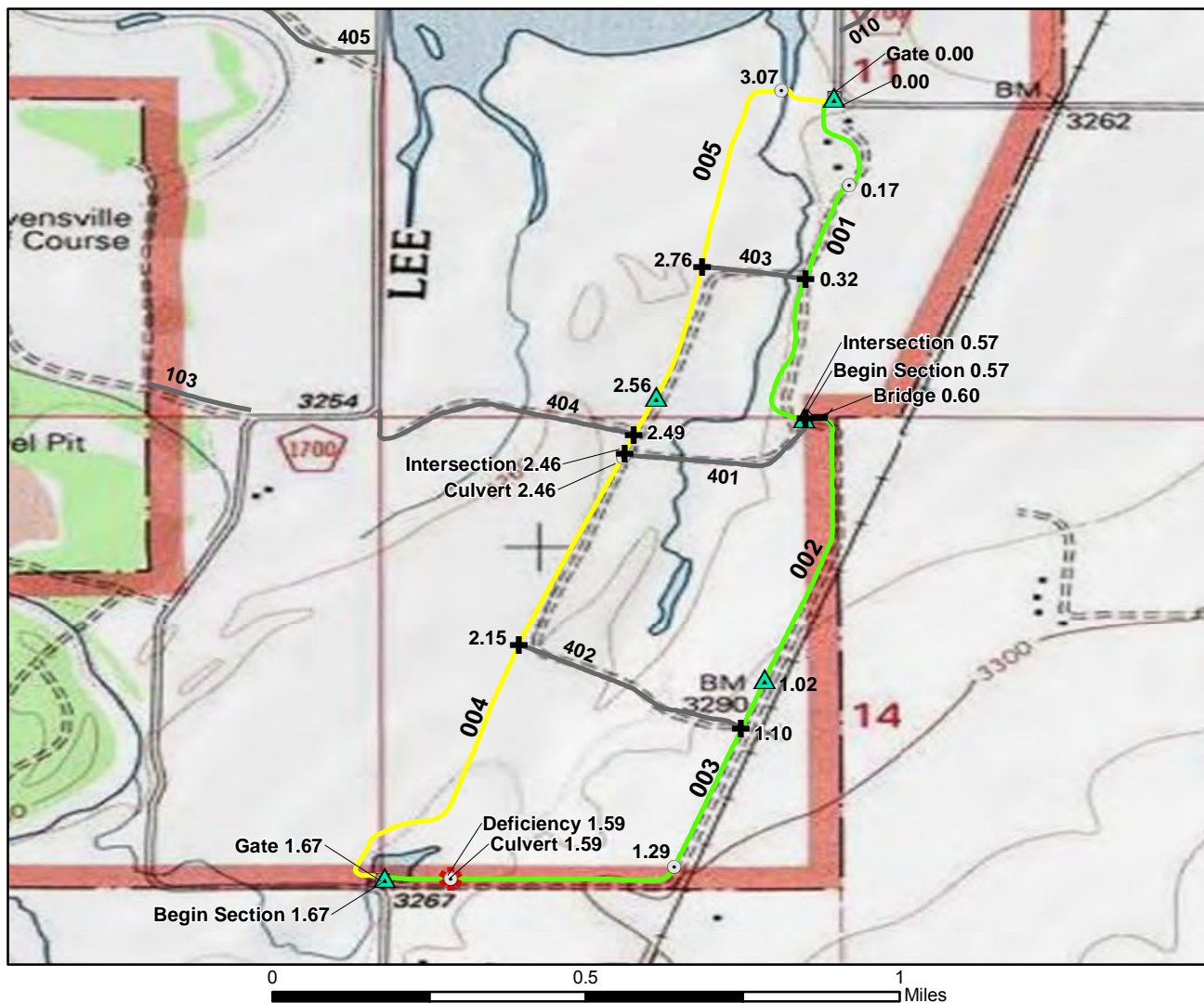


ROUTE: 302 Residence Area Access Road TOTAL LENGTH: 0.50 Miles

ASSET: 10026628

RTE DESCRIPTION: From Wildfowl Lane to Pools 7/9 North Slough Road (Route 409)

Section Number	001	002	003		
Section Length (miles)	0.19	0.24	0.07		
Inspection Date	8/27/2008	8/27/2008	8/27/2008		
<b>Section Information</b>					
Surface Type	Gravel	Gravel	Native		
Number of Lanes	2	1	1		
Roadway Width (feet)	18	12	8		
<b>Roadway Condition Information</b>					
Condition	Excellent	Excellent	Good		
Remaining Service Life (years)	10	9	7		
Cost Estimate	\$0	\$0	\$100		
CRV	\$129900	\$160400	\$23900		



ROUTE: 400 Pools 1-4 Perimeter Road

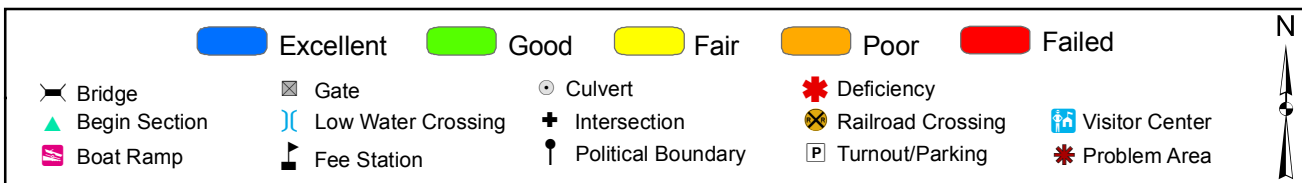
TOTAL LENGTH: 3.15 Miles

ASSET: 10026628

RTE DESCRIPTION: From Wildfowl Lane to end of loop around pools 1-4

Section Number	001	002	003	004	005
Section Length (miles)	0.57	0.45	0.66	0.89	0.58
Inspection Date	8/27/2008	8/27/2008	8/27/2008	8/27/2008	8/27/2008
<b>Section Information</b>					
Surface Type	Gravel	Native	Gravel	Native	Native
Number of Lanes	1	1	1	1	1
Roadway Width (feet)	10	8	10	10	10
<b>Roadway Condition Information</b>					
Condition	Good	Good	Good	Fair	Fair
Remaining Service Life (years)	5	7	7	4	4
Cost Estimate	\$900	\$800	\$1000	\$1900	\$1200
CRV	\$384600	\$157200	\$440300	\$308500	\$202900





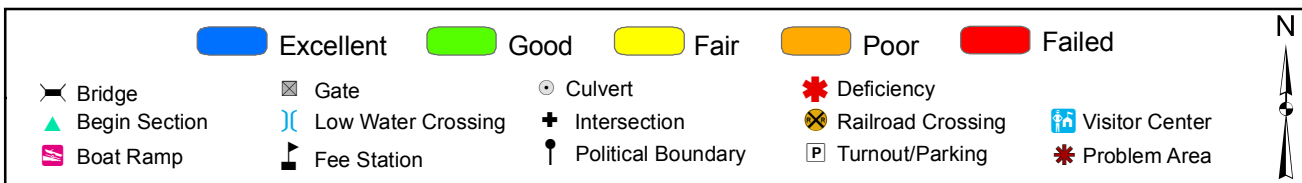
ROUTE: 401 Pools 2-3 Access Road

TOTAL LENGTH: 0.25 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 1-4 Perimeter Road (Route 400 ) to Pools 1-4 Perimeter Road (Route 400 )  
between pools 2 and 3

Section Number	001				
Section Length (miles)	0.25				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$400				
CRV	\$85700				

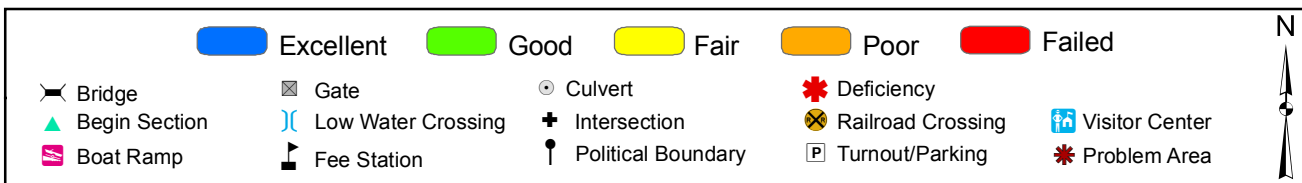


ROUTE: 402      Pools 1-2 Access Road      TOTAL LENGTH: 0.28 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 1-4 Perimeter Road (Route 400 )  
to Pools 1-4 Perimeter Road (Route 400 ) between pools 1 and 2

Section Number	001				
Section Length (miles)	0.28				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$500				
CRV	\$98600				



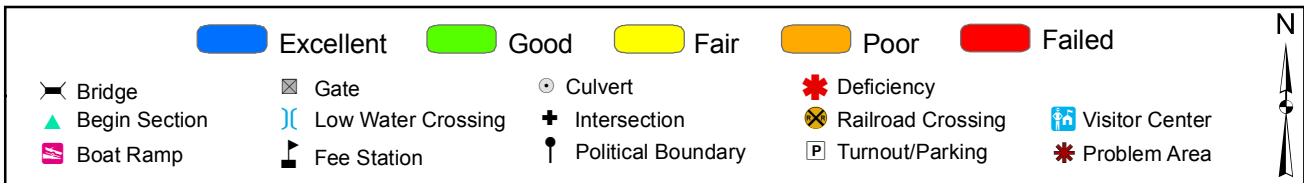
ROUTE: 403 Pools 3-4 Access Road

TOTAL LENGTH: 0.12 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 1-4 Perimeter Road (Route 400 )  
to Pools 1-4 Perimeter Road (Route 400) between pools 3 and 4

Section Number	001				
Section Length (miles)	0.12				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$200				
CRV	\$77500				



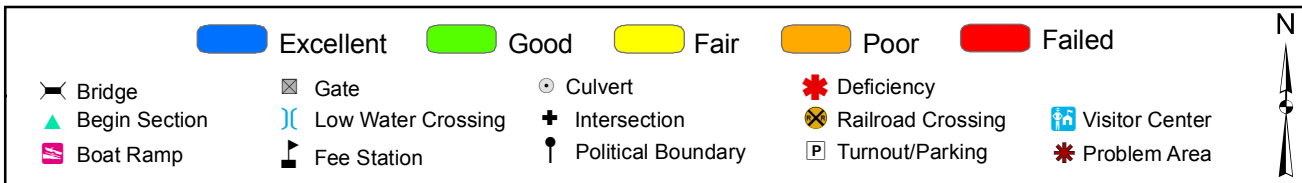
ROUTE: 404      Pool 2A Access Road      TOTAL LENGTH: 0.35 Miles

ASSET: 10037271

RTE DESCRIPTION: From Wildfowl Lane to Pools 1-4 Perimeter Road (Route 400)

Section Number	001				
Section Length (miles)	0.35				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$500				
CRV	\$233300				



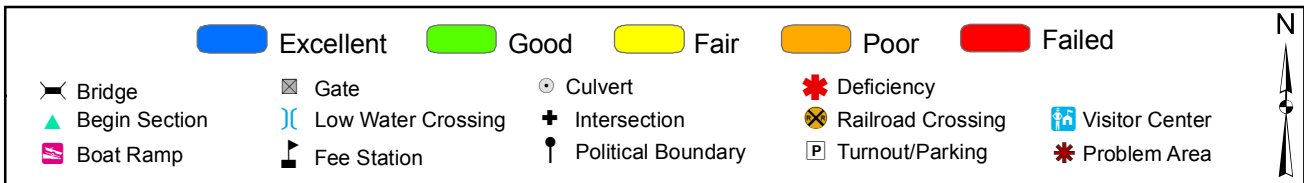
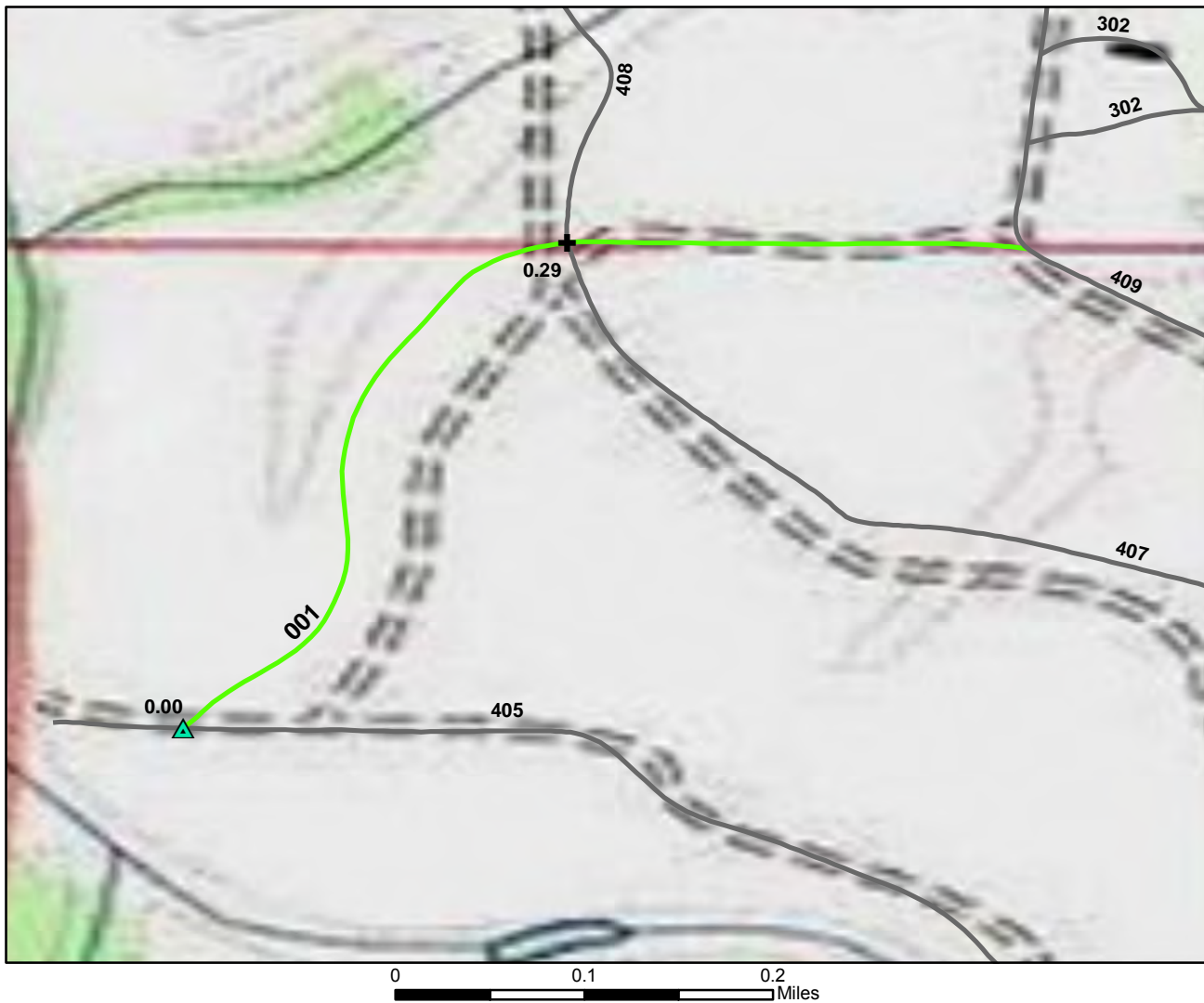


ROUTE: 405 Barn Slough Road TOTAL LENGTH: 0.51 Miles

ASSET: 10037272

RTE DESCRIPTION: From Wildfowl Lane to end of route at river

Section Number	001				
Section Length (miles)	0.51				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$800				
CRV	\$339700				



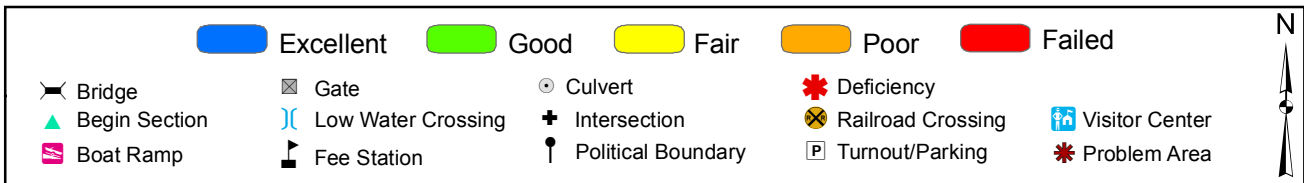
ROUTE: 406 Pool D Road

TOTAL LENGTH: 0.48 Miles

ASSET: 10026628

RTE DESCRIPTION: From Barn Slough Road (Route 405) to Pools 7/9/North Slough Road (Route 409)

Section Number	001				
Section Length (miles)	0.48				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$800				
CRV	\$325100				



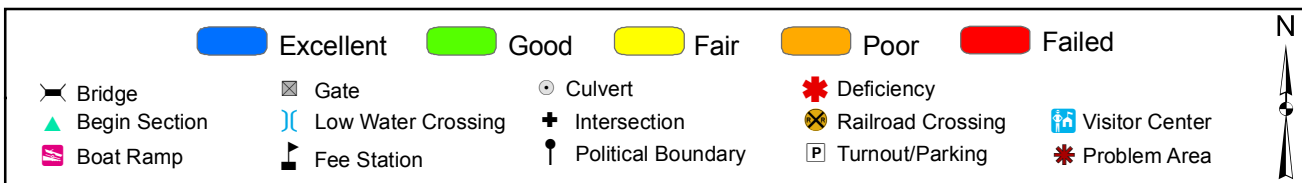
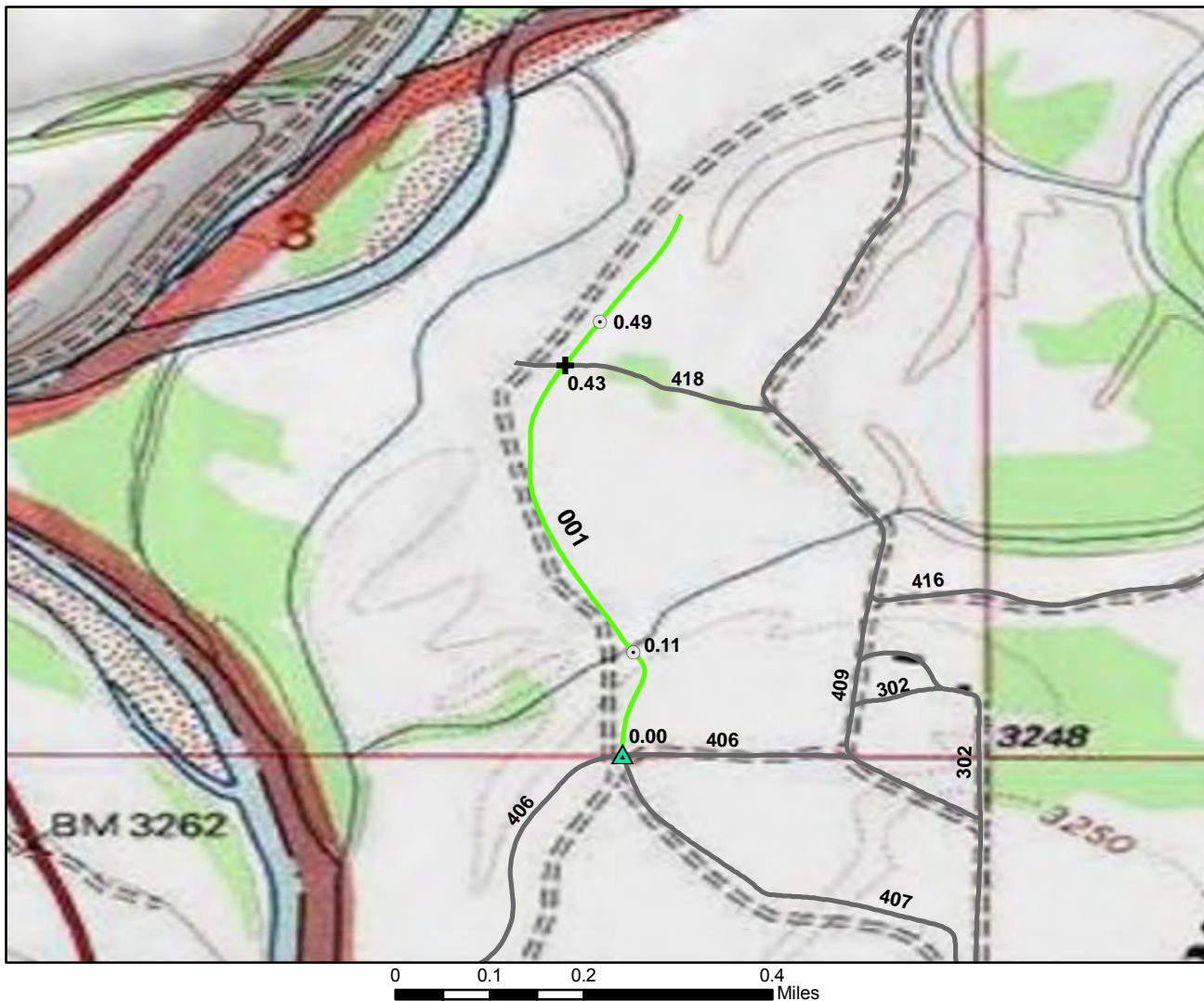
ROUTE: 407      Pool A Road      TOTAL LENGTH: 0.41 Miles

ASSET: 10026628

RTE DESCRIPTION: From Wildfowl Lane to West Pools 7/9 Access Road (Route 408)

Section Number	001				
Section Length (miles)	0.41				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$700				
CRV	\$141400				



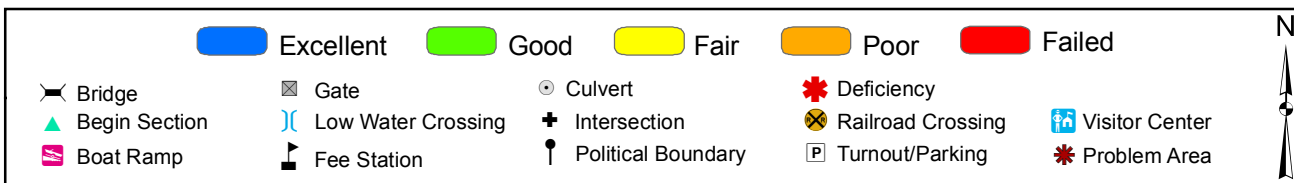
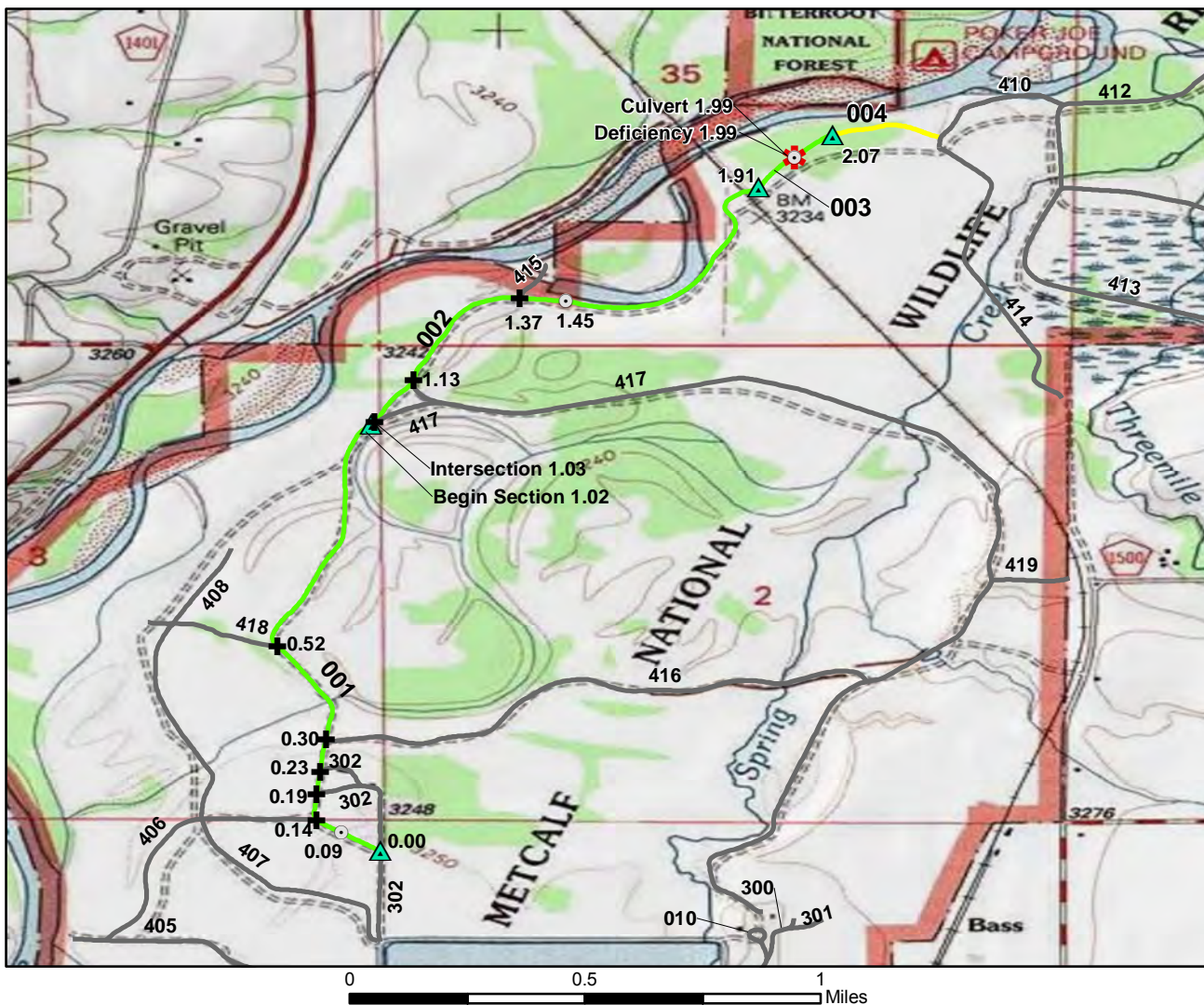


ROUTE: 408 West Pools 7/9 Access Road TOTAL LENGTH: 0.62 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pool D Road (Route 406) to end of route at river washout

Section Number	001				
Section Length (miles)	0.62				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$1000				
CRV	\$216000				



ROUTE: 409 North Slough Access Road

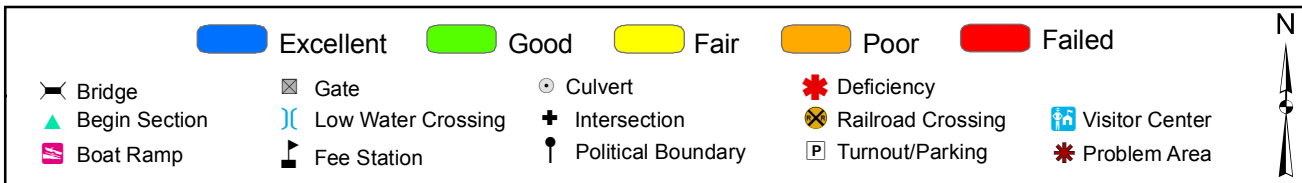
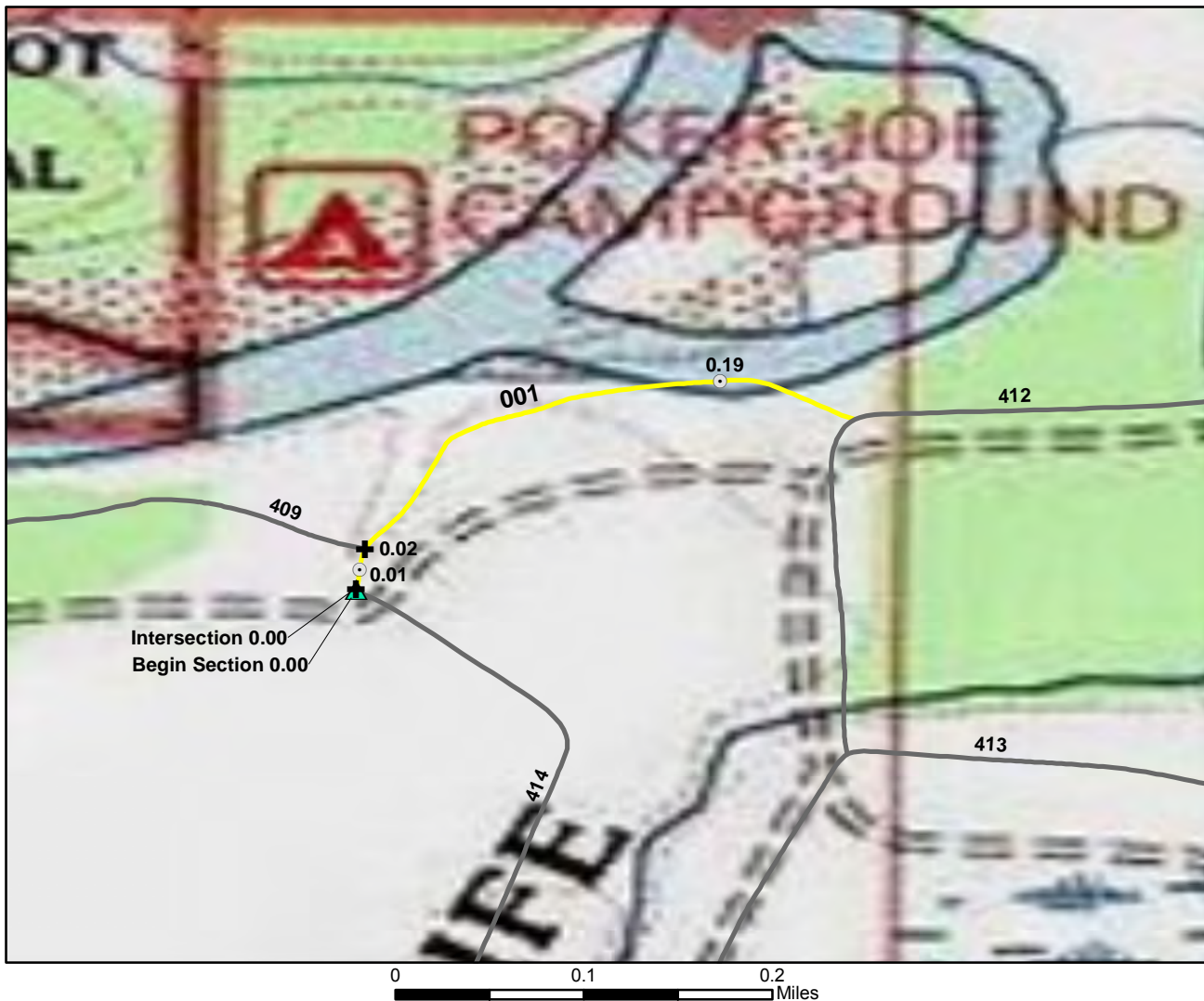
TOTAL LENGTH: 2.23 Miles

ASSET: 10026628

RTE DESCRIPTION: From Residence Area Road (Route 302) to North Refuge River Access 2 (Route 410)

Section Number	001	002	003	004	
Section Length (miles)	1.02	0.89	0.16	0.17	
Inspection Date	8/27/2008	8/27/2008	8/27/2008	8/27/2008	
<b>Section Information</b>					
Surface Type	Gravel	Gravel	Native	Gravel	
Number of Lanes	1	1	1	1	
Roadway Width (feet)	10	8	8	8	
<b>Roadway Condition Information</b>					
Condition	Good	Good	Good	Fair	
Remaining Service Life (years)	7	7	5	4	
Cost Estimate	\$1600	\$1400	\$300	\$600	
CRV	\$683500	\$600800	\$54300	\$112800	



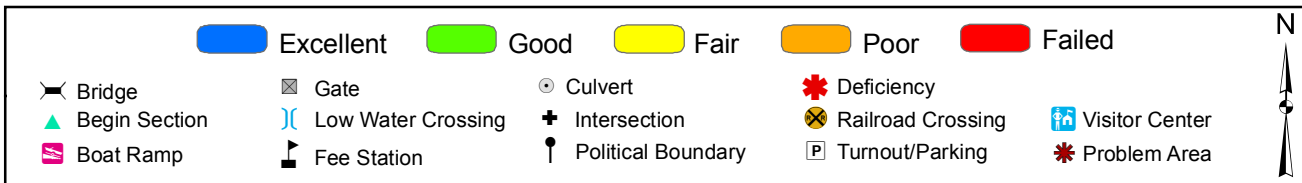


ROUTE: 410 North Refuge River Access 2 TOTAL LENGTH: 0.25 Miles

ASSET: 10026628

RTE DESCRIPTION: From Otter Pond Road (Route 410) to Pond 12 Road (Route 412)

Section Number	001				
Section Length (miles)	0.25				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Fair				
Remaining Service Life (years)	4				
Cost Estimate	\$500				
CRV	\$86300				



ROUTE: 411 Pond 13 Road

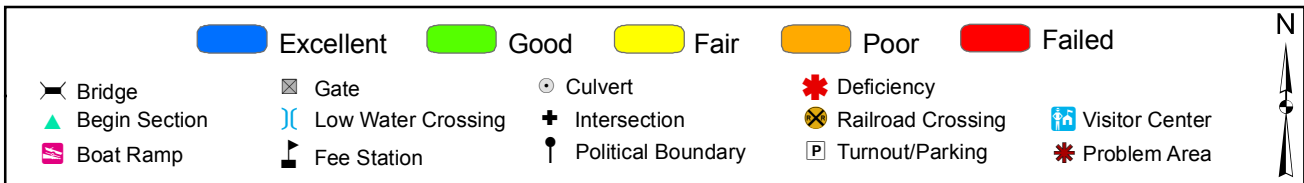
TOTAL LENGTH: 0.82 Miles

ASSET: 10026633

RTE DESCRIPTION: From Pond 12 Road (Route 12) to Pond 12 Road (Route 12)- wash out in center before section 002

Section Number	001	002			
Section Length (miles)	0.13	0.70			
Inspection Date	8/27/2008	8/27/2008			
<b>Section Information</b>					
Surface Type	Native	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	8	8			
<b>Roadway Condition Information</b>					
Condition	Excellent	Good			
Remaining Service Life (years)	10	7			
Cost Estimate	\$0	\$1100			
CRV	\$44400	\$467500			





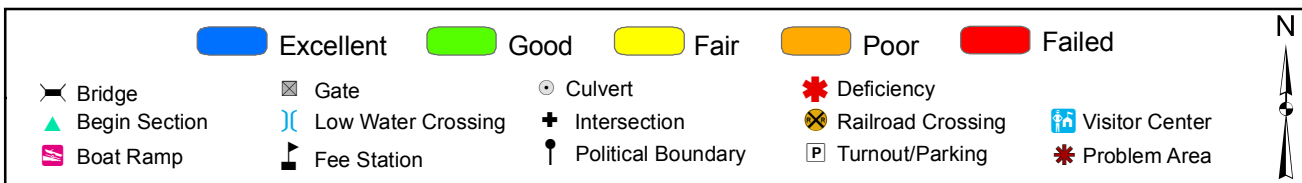
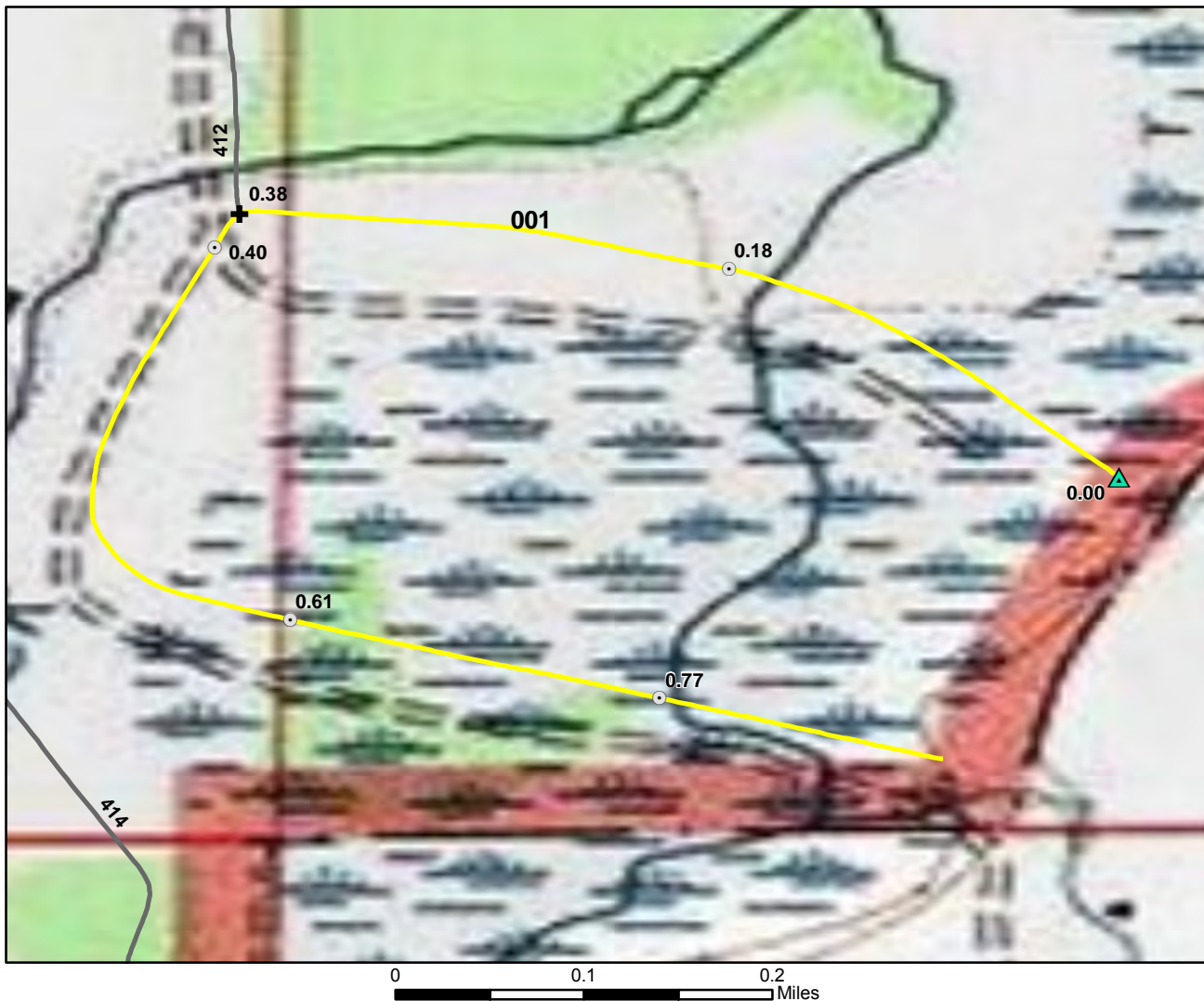
ROUTE: 412 Pond 12 Road

TOTAL LENGTH: 0.86 Miles

ASSET: 10026628

RTE DESCRIPTION: From Eastside Highway (State Highway 203) to Pond 11 Road (Route 413)

Section Number	001	002			
Section Length (miles)	0.69	0.18			
Inspection Date	8/27/2008	8/27/2008			
<b>Section Information</b>					
Surface Type	Gravel	Native			
Number of Lanes	1	1			
Roadway Width (feet)	8	8			
<b>Roadway Condition Information</b>					
Condition	Excellent	Excellent			
Remaining Service Life (years)	9	9			
Cost Estimate	\$0	\$0			
CRV	\$460800	\$60900			



ROUTE: 413      Pond 11 Road

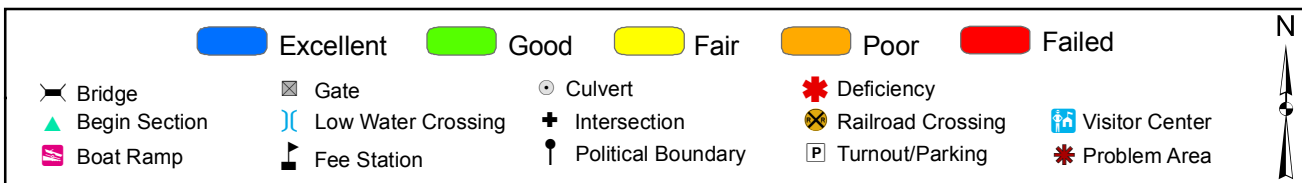
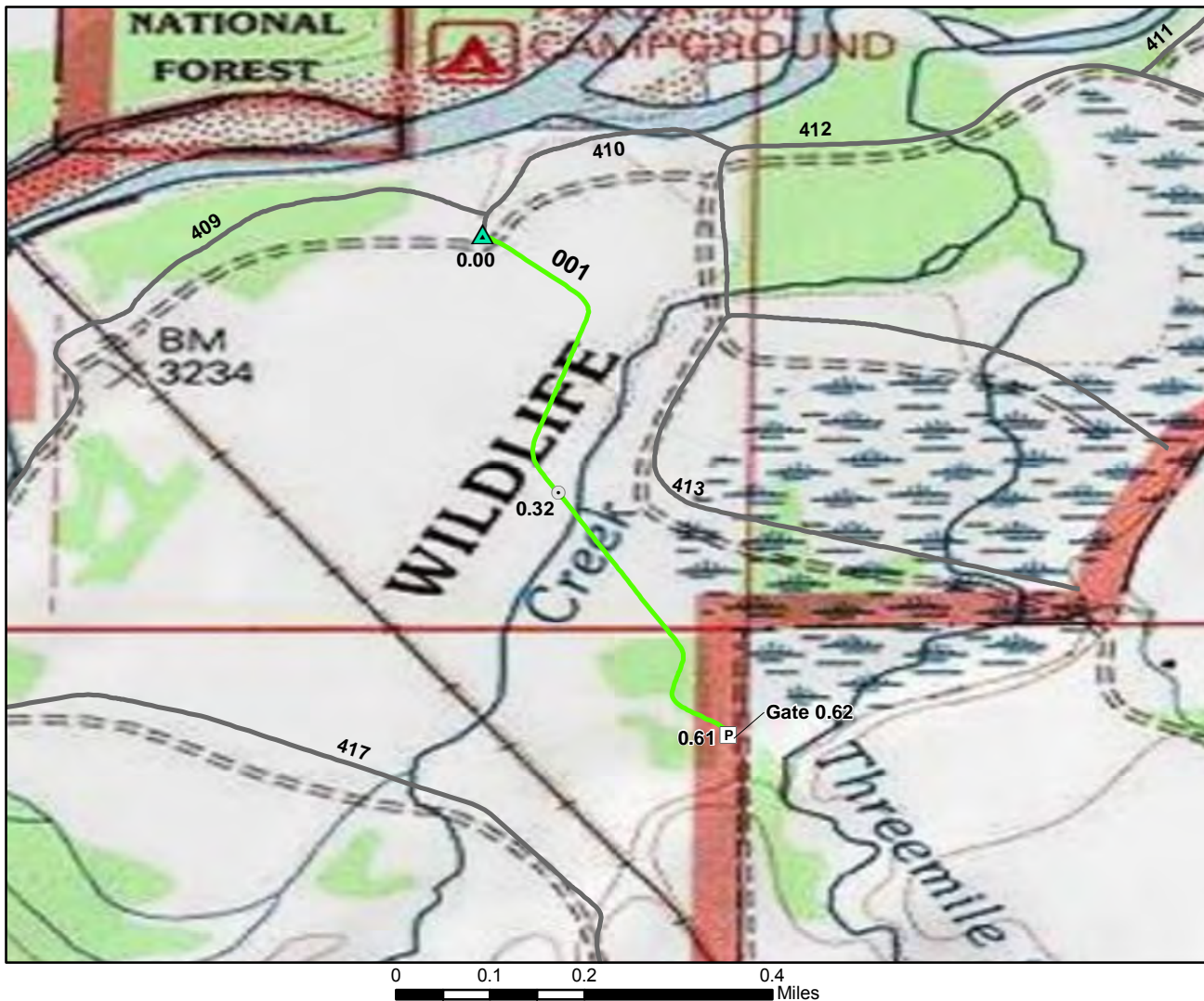
TOTAL LENGTH: 0.88 Miles

ASSET: 10026628

RTE DESCRIPTION: From base of hill near refuge boundary to mower turnaround SE of Pond 11

Section Number	001				
Section Length (miles)	0.88				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Fair				
Remaining Service Life (years)	4				
Cost Estimate	\$1900				
CRV	\$307400				





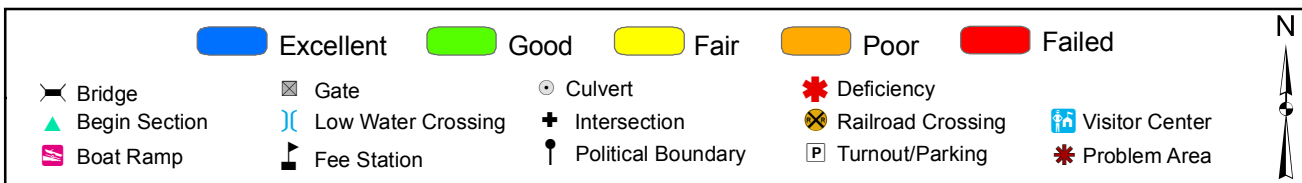
ROUTE: 414 Otter Pond Road

TOTAL LENGTH: 0.62 Miles

ASSET: 10026628

RTE DESCRIPTION: From North Refuge River Access 2 (Route 410) to North Rathbun Hunter/Waterfowl Access Parking

Section Number	001				
Section Length (miles)	0.62				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$1000				
CRV	\$214800				



ROUTE: 415 North Refuge River Access 1

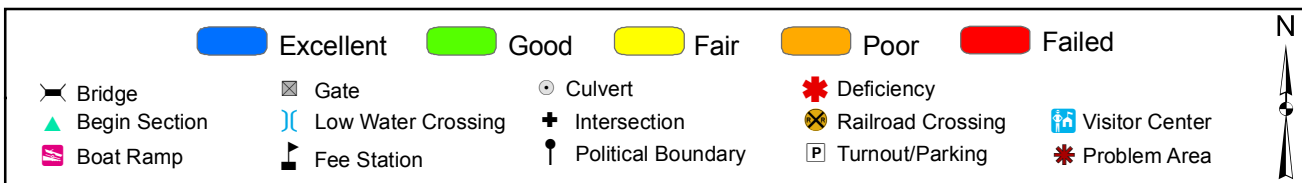
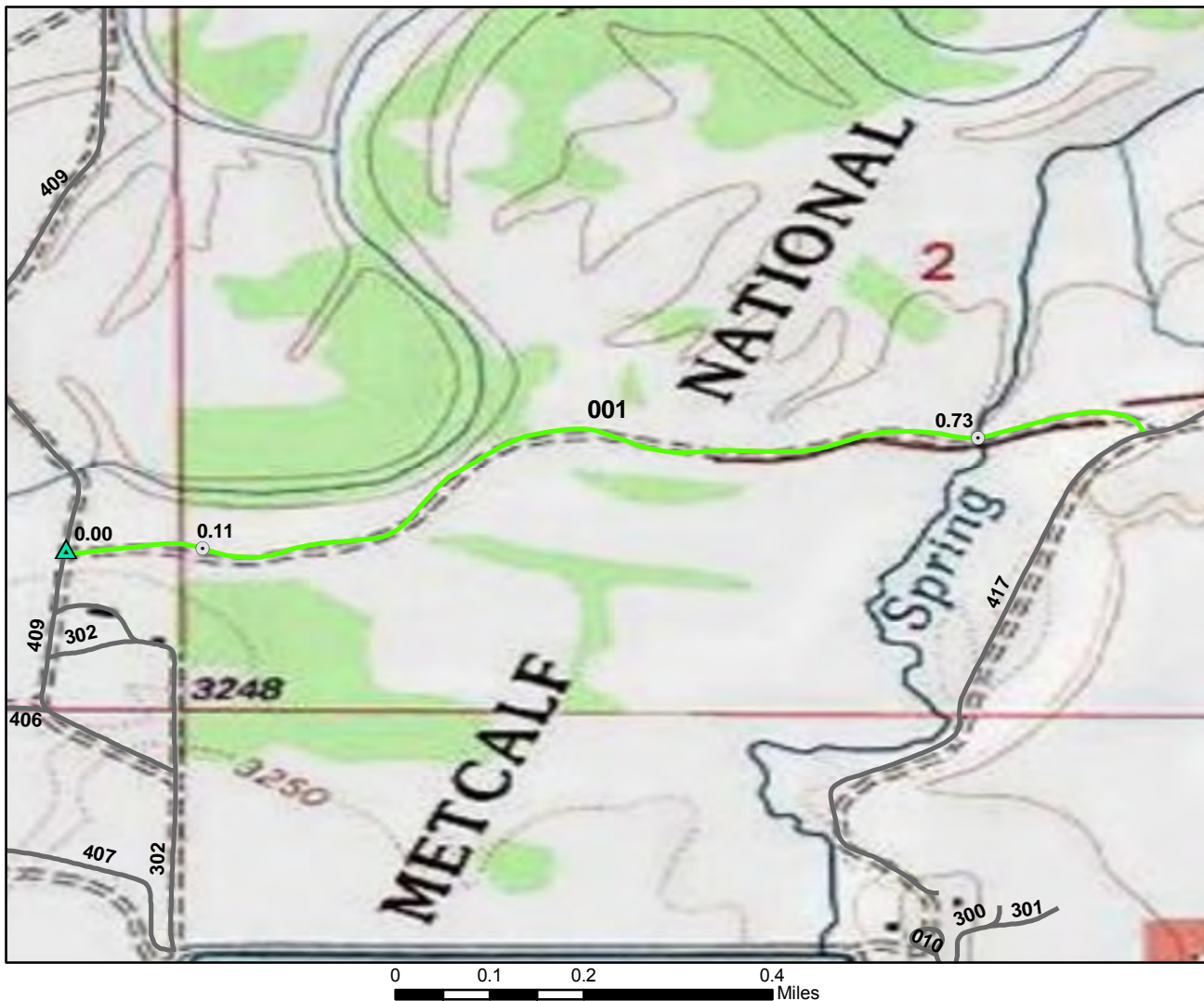
TOTAL LENGTH: 0.08 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 7/9/North Slough Road to end of route at river

Section Number	001				
Section Length (miles)	0.08				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	\$0				
CRV	\$29200				





ROUTE: 416 North Pool 8 Road TOTAL LENGTH: 0.87 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 7/9/North Slough Road to Pools 8/10 Road (Route 417)

Section Number	001				
Section Length (miles)	0.87				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	10				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	7				
Cost Estimate	\$1400				
CRV	\$585500				



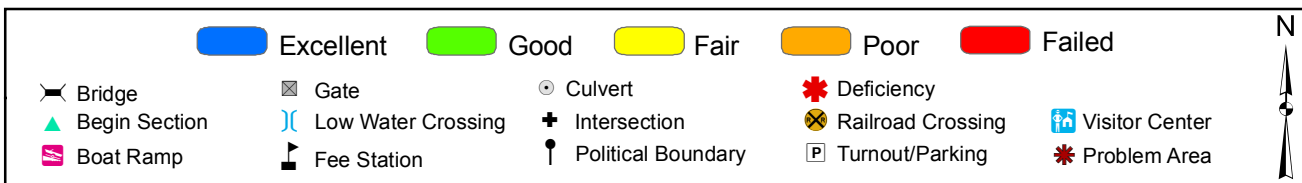
ROUTE: 417 Pools 8/10 Access Road

TOTAL LENGTH: 2.19 Miles

ASSET: 10026628

RTE DESCRIPTION: From Shop Parking (Route 800) to Pools 7/9/North Slough Road (Route 409)

Section Number	001	002	003		
Section Length (miles)	1.01	1.08	0.11		
Inspection Date	8/27/2008	8/27/2008	8/27/2008		
<b>Section Information</b>					
Surface Type	Gravel	Gravel	Gravel		
Number of Lanes	1	1	1		
Roadway Width (feet)	10	10	10		
<b>Roadway Condition Information</b>					
Condition	Good	Excellent	Excellent		
Remaining Service Life (years)	7	9	10		
Cost Estimate	\$1600	\$0	\$0		
CRV	\$677000	\$724000	\$73100		



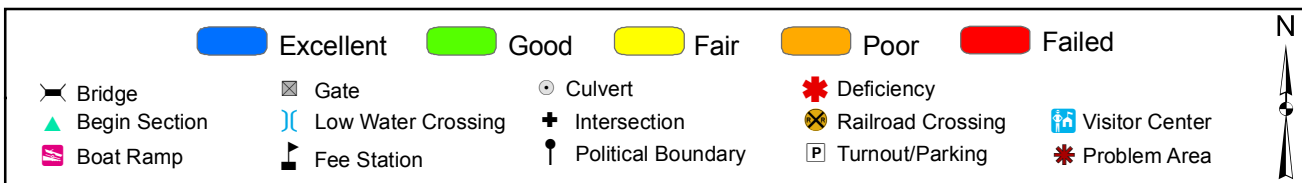
ROUTE: 418 Pools 7/9 Cut Across Access Road TOTAL LENGTH: 0.20 Miles

ASSET: 10026628

RTE DESCRIPTION: From Pools 7/9/North Slough Road (Route 409) to end of route

Section Number	001				
Section Length (miles)	0.20				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Excellent				
Remaining Service Life (years)	9				
Cost Estimate	\$0				
CRV	\$69600				





ROUTE: 419      East Refuge Access Road      TOTAL LENGTH: 0.12 Miles

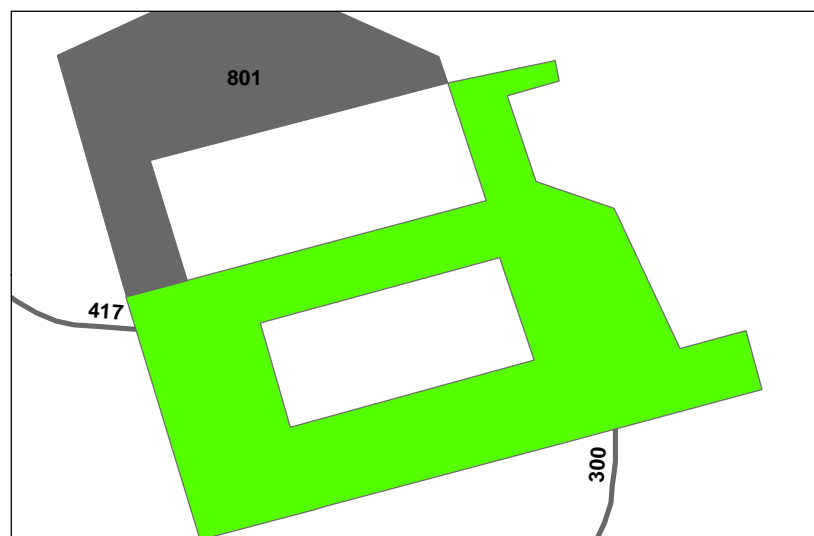
ASSET: 10026628

RTE DESCRIPTION: From Pools 8/10 Road (Route 417) to Rathbun Lane

Section Number	001				
Section Length (miles)	0.12				
Inspection Date	8/27/2008				
<b>Section Information</b>					
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	8				
<b>Roadway Condition Information</b>					
Condition	Good				
Remaining Service Life (years)	5				
Cost Estimate	\$200				
CRV	\$40300				

## Route 800: Shop Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037370	8/27/2008	Gravel	39042	Good	\$5700

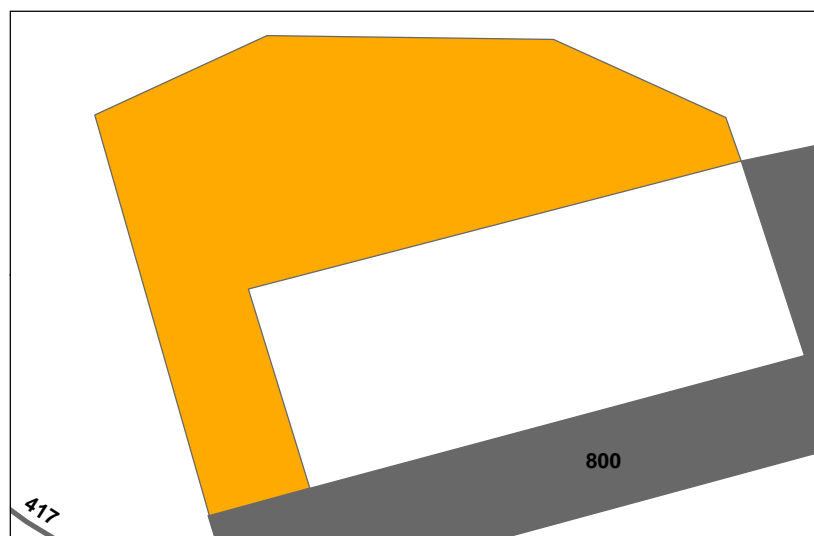


100 50 0 100 Feet



## Route 801: Rear Shop Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037370	8/27/2008	Native	17082	Poor	\$13500



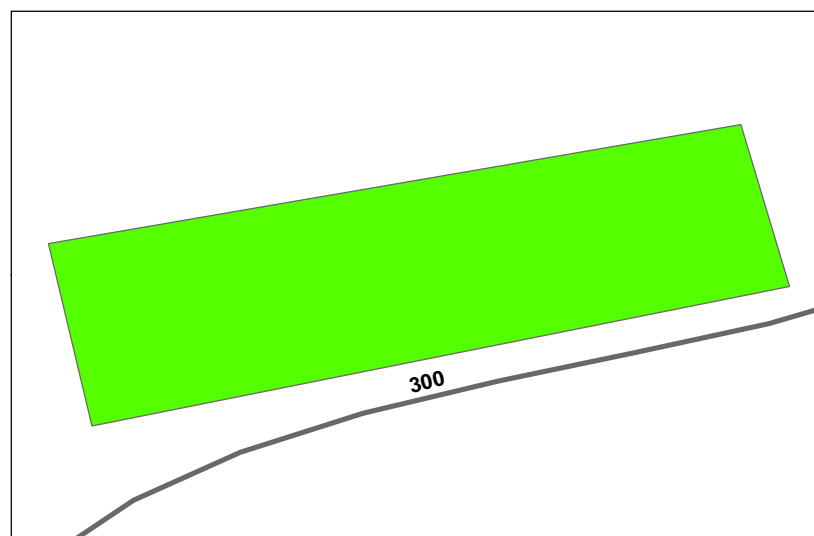
40 20 0 40 80 Feet





## Route 802: Employee Parking

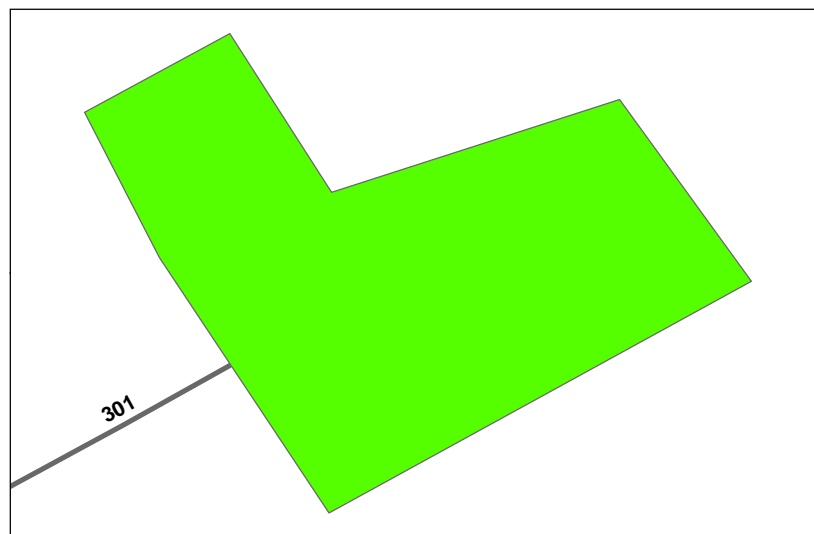
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10054144	8/27/2008	Gravel	2805	Good	\$400



20 10 0 20 Feet

## Route 803: Bunkhouse Parking

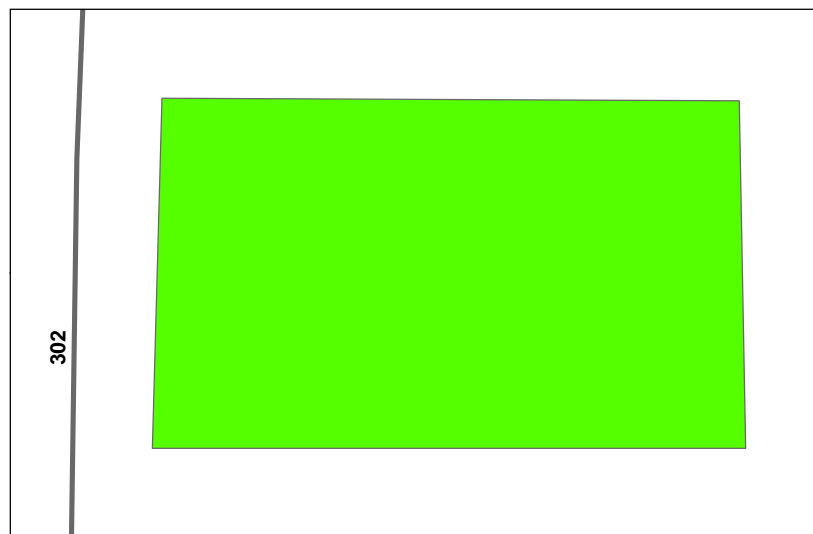
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10054145	8/27/2008	Gravel	2657	Good	\$400



10 5 0 10 20 Feet

## Route 804: Residence Area Parking

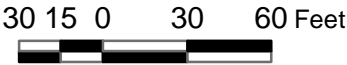
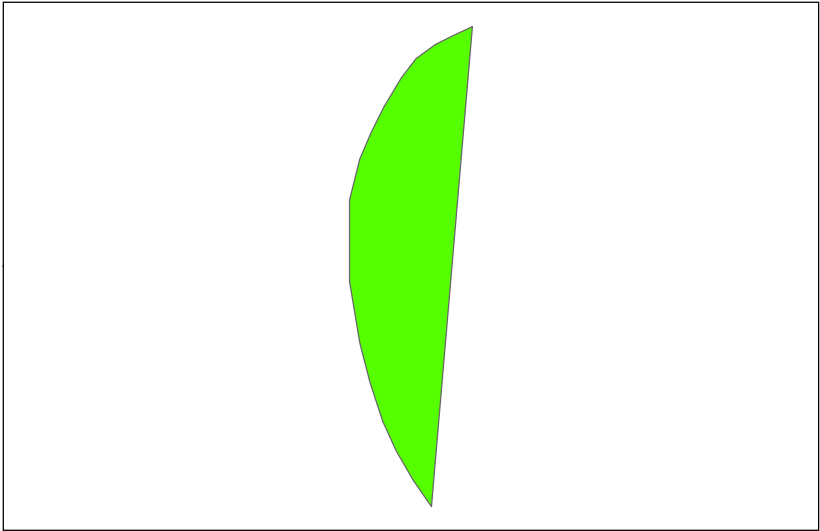
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
	8/27/2008	Gravel	874	Good	\$100





**Route 902: Salish Interpretive Parking Area**

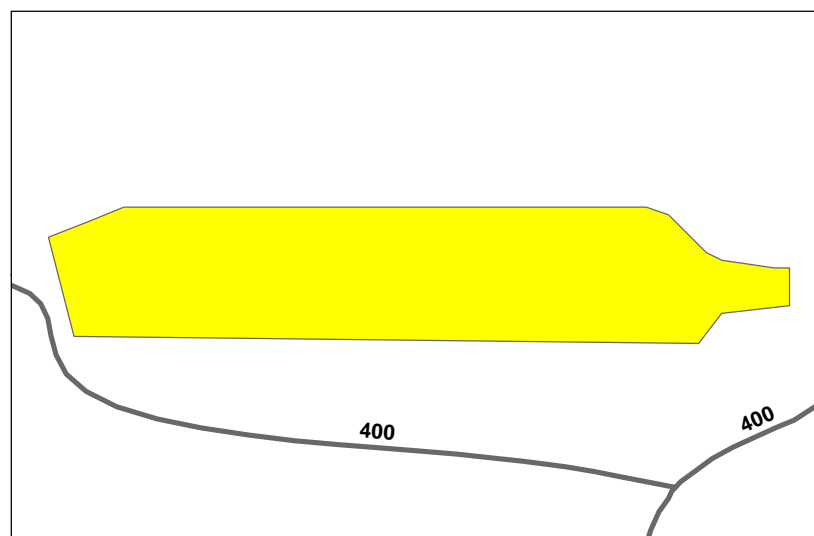
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037263	8/27/2008	Gravel	3143	Good	\$500





## Route 906: North Hunter/Waterfowl Access Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037267	8/27/2008	Gravel	14074	Fair	\$3600

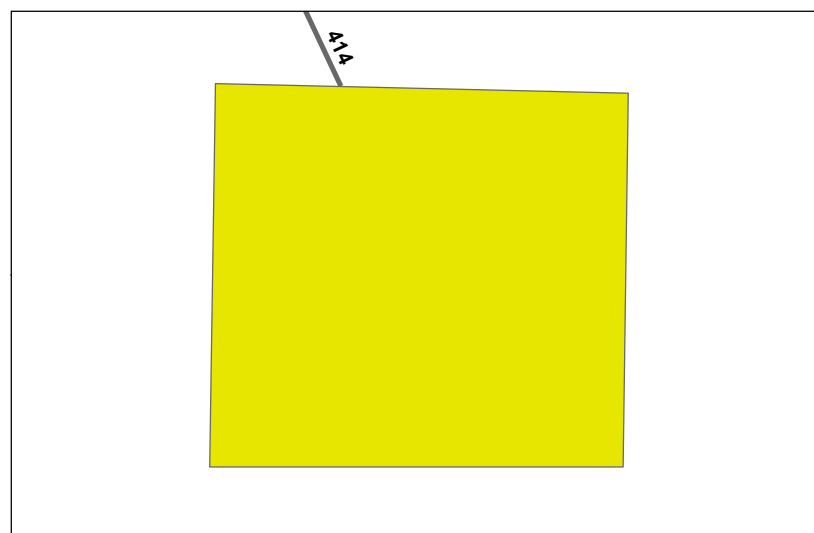


40 20 0 40 80 Feet



## Route 907: North Rathbun Hunter/Waterfowl Access Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037268	8/27/2008	Native	4241	Fair	\$1100

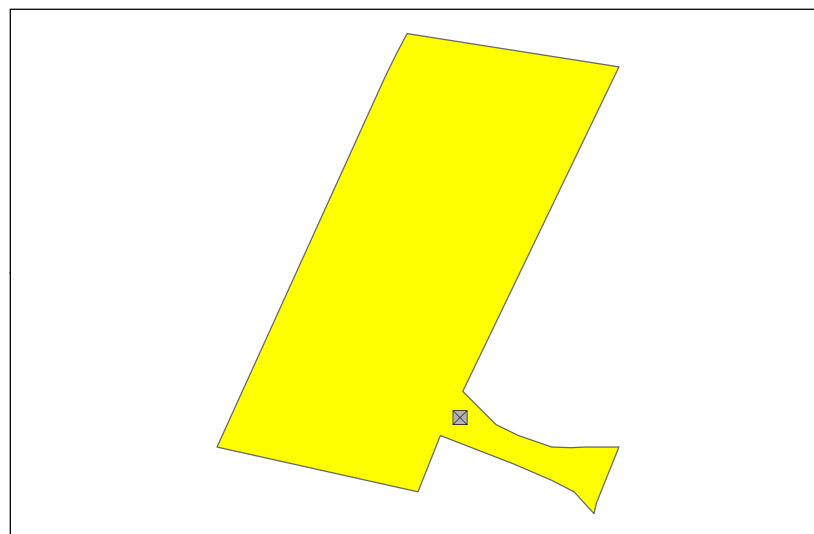


20 10 0 20 Feet




## Route 908: Eastside Highway Access Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037269	8/27/2008	Gravel	7382	Fair	\$1900

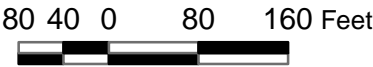
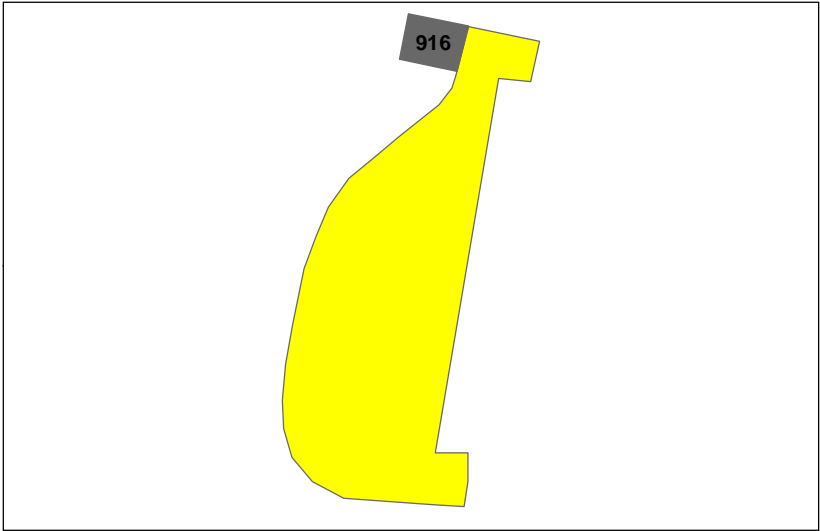


30 15 0 30 60 Feet



Route 912: Wildlife Viewing Area Parking

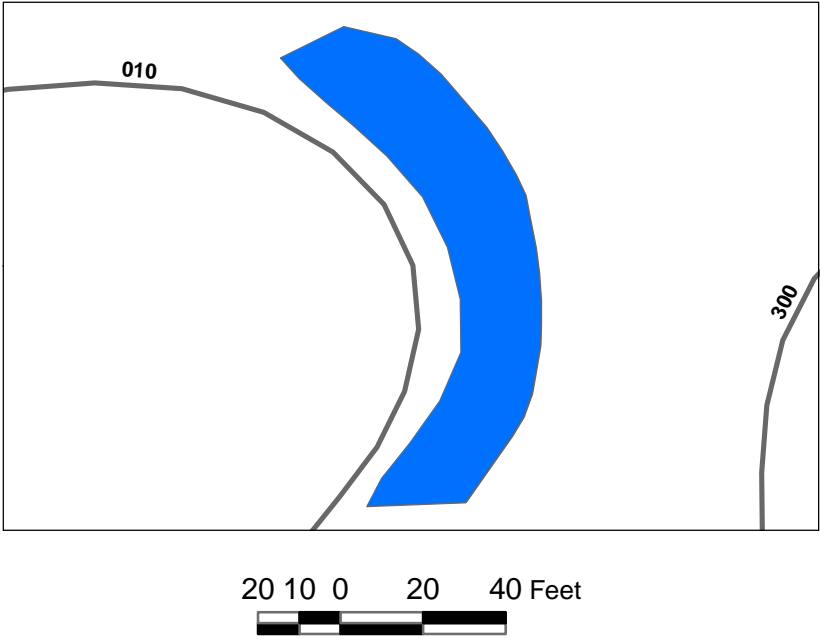
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10026647	8/27/2008	Gravel	34186	Fair	\$8800





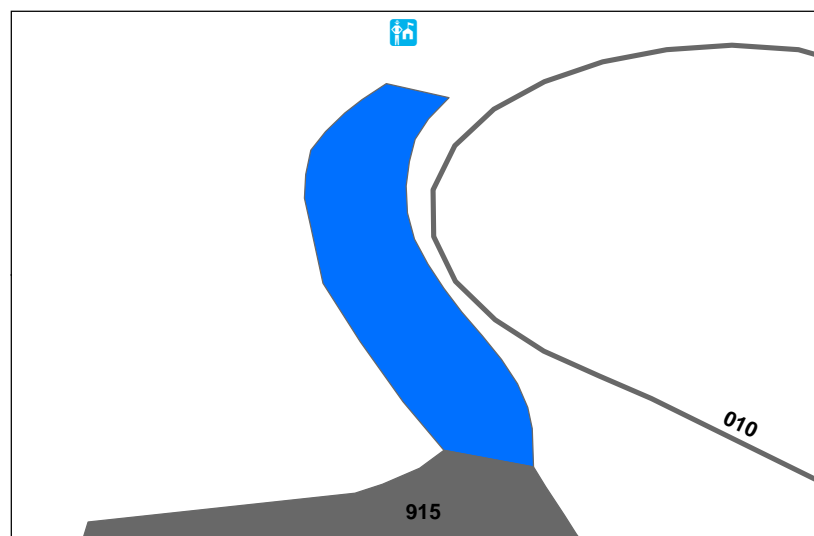
# Route 913: HQ/VC Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10054142	8/27/2008	Asphalt	1967	Excellent	\$0



## Route 914: HQ/VC Parking - West

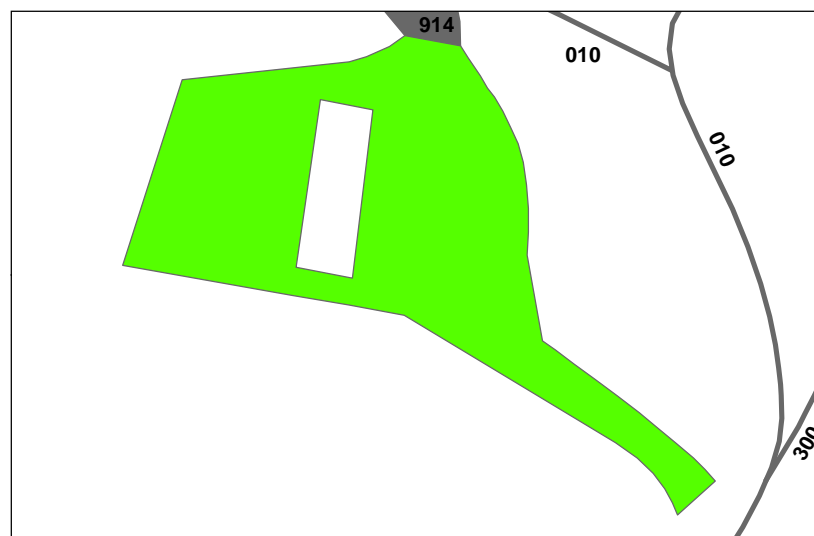
Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10054142	8/27/2008	Asphalt	2784	Excellent	\$0




30 15 0 30 60 Feet

## Route 915: HQ/VC Gravel Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10054143	8/27/2008	Gravel	16301	Good	\$2400



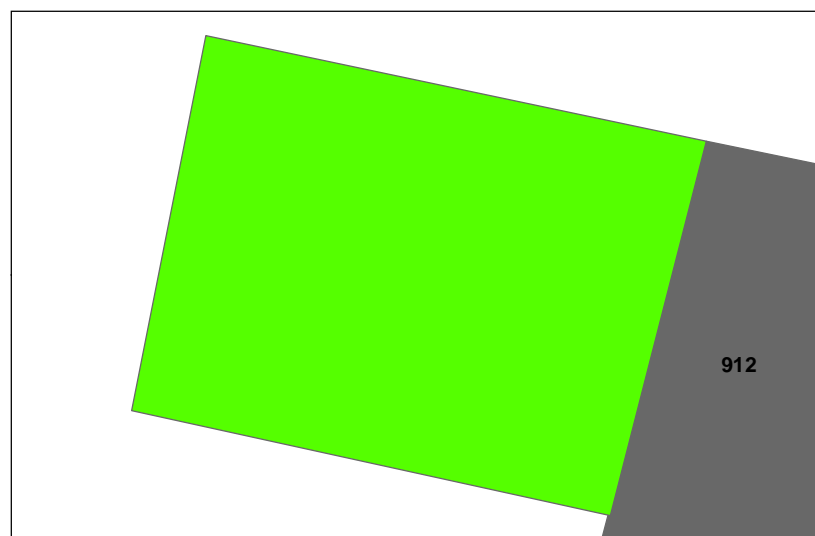
50 25 0 50 100 Feet





## Route 916: Wildlife Viewing Area Handicap Parking

Asset Number	Date Visited	Surface Type	Area (sq ft)	Condition	Cost to Improve
10037273	8/27/2008	Asphalt	1539	Good	\$300



10 5 0 10 20 Feet

A scale bar with markings for 10, 5, 0, 10, and 20 feet.



Lee Metcalf NWR Bridge Inventory					
Rte #	Milepost	NBIS #	Sufficiency Rating	Functionally Obsolete	Structurally Deficient
400	0.6	N/A	N/A	N/A	N/A

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: HQ/VC Entrance Road



Photo # 2423 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 010 ROUTE NAME: HQ/VC Entrance Road



Photo # 2424 - MP 0.11 - Begin Section 002

ROUTE NUMBER: 300 ROUTE NAME: Shop Road



Photo # 2431 - MP 0.00 - Begin Route at Begin Section

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 301 ROUTE NAME: Bunkhouse Road



Photo # 2439 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 302 ROUTE NAME: Residence Area Access Road



Photo # 2492 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 302 ROUTE NAME: Residence Area Access Road



Photo # 2494 - MP 0.19 - Begin Section 002



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 302 ROUTE NAME: Residence Area Access Road



Photo # 2495 - MP 0.34 - Begin Section 003

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2443 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2448 - MP 0.57 - Begin Section 002



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2447 - MP 0.60 - Bridge

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2450 - MP 1.02 - Begin Section 003

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2454 - MP 1.59 - Culvert Deficiency



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2455 - MP 1.59 - Culvert Deficiency

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2457 - MP 1.67 - Begin Section 004

ROUTE NUMBER: 400 ROUTE NAME: Pools 1-4 Perimeter Road



Photo # 2461 - MP 2.56 - Begin Section 005

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 401 ROUTE NAME: Pools 2-3 Access Road



Photo # 2449 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 402 ROUTE NAME: Pools 1-2 Access Road



Photo # 2451 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 403 ROUTE NAME: Pools 3-4 Access Road



Photo # 2464 - MP 0.00 - Begin Route at Begin Section



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 404 ROUTE NAME: Pool 2A Access Road



Photo # 2475 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 405 ROUTE NAME: Barn Slough Road



Photo # 2480 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 406 ROUTE NAME: Pool D Road



Photo # 2484 - MP 0.00 - Begin Route at Begin Section

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 407 ROUTE NAME: Pool A Road



Photo # 2485 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 408 ROUTE NAME: West Pools 7/9 Access Road



Photo # 2487 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2497 - MP 0.00 - Begin Route at Begin Section



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2500 - MP 1.02 - Begin Section 002

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2503 - MP 1.91 - Begin Section 003

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2504 - MP 1.99 - Culvert Deficiency



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2505 - MP 1.99 - Culvert Deficiency

ROUTE NUMBER: 409 ROUTE NAME: North Slough Access Road



Photo # 2506 - MP 2.07 - Begin Section 004

ROUTE NUMBER: 410 ROUTE NAME: North Refuge River Access 2



Photo # 2507 - MP 0.00 - Begin Route at Begin Section

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 411 ROUTE NAME: Pond 13 Road



Photo # 2512 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 411 ROUTE NAME: Pond 13 Road



Photo # 2515 - MP 0.00 - Begin Section 002

ROUTE NUMBER: 412 ROUTE NAME: Pond 12 Road



Photo # 2520 - MP 0.00 - Begin Route at Begin Section



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 412 ROUTE NAME: Pond 12 Road



Photo # 2523 - MP 0.69 - Begin Section 002

ROUTE NUMBER: 413 ROUTE NAME: Pond 11 Road



Photo # 2532 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 414 ROUTE NAME: Otter Pond Road



Photo # 2533 - MP 0.00 - Begin Route at Begin Section



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 415 ROUTE NAME: North Refuge River Access 1



Photo # 2539 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 416 ROUTE NAME: North Pool 8 Road



Photo # 2541 - MP 0.00 - Begin Route at Begin Section

ROUTE NUMBER: 417 ROUTE NAME: Pools 8/10 Access Road



Photo # 2546 - MP 0.00 - Begin Route at Begin Section

## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 417 ROUTE NAME: Pools 8/10 Access Road



Photo # 2550 - MP 1.01 - Begin Section 002

ROUTE NUMBER: 417 ROUTE NAME: Pools 8/10 Access Road



Photo # 2553 - MP 2.09 - Begin Section 003

ROUTE NUMBER: 418 ROUTE NAME: Pools 7/9 Cut Across Access Road



Photo # 2540 - MP 0.00 - Begin Route at Begin Section



## FEATURES PHOTOGRAPHS

ROUTE NUMBER: 419 ROUTE NAME: East Refuge Access Road



Photo # 2554 - MP 0.00 - Begin Route at Begin Section



**Lee Metcalf NWR  
Accident Summary**

<b>Number of Accidents Reported</b>	<b>Timespan of Accidents</b>	<b>Injuries</b>	<b>Fatalities</b>
2	12/26/2004 - 11/5/2006	0	0

## APPENDIX

<b>FWS ROAD FUNCTIONAL CLASSIFICATION</b>	
<b>Class I</b>	Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99.
<b>Class II</b>	Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199.
<b>Class III</b>	Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299
<b>Class IV</b>	Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399.
<b>Class V</b>	Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499.

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route.

## DESCRIPTION OF RATING SYSTEM

Rating Data is collected on five different surface types: Asphalt, Concrete, Gravel, Native Improved and Native Primitive. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

### Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking** - Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking** - Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking** - Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking** - Interconnected cracks forming large blocks.
- **Edge Cracking** - Cracks running along the edge of the pavement surface.
- **Patches** - Original surface repaired with new asphalt patch material.
- **Potholes** - Holes or depressions in the pavement.
- **Rutting** - surface depressions in the wheel paths.
- **Roughness** - Evenness of pavement for serviceability.
- **Drainage** - Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

### Rating Index Formula

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has a given Remaining Service Life (RSL) value (in years) based on the rating for that distress. The distress rating resulting in the lowest RSL value is considered to be the governing distress. That value is assigned as the RSL of the road segment.

### Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** - Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** - Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** - A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** - Faulting and/or cracking localized to individual slabs.
- **Faulting** - Difference in elevation across a crack or joint.
- **Longitudinal Cracking** - Cracks in the pavement running parallel to road.



- **Transverse Cracking** - Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

### **Rating Index Formula**

The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

### **Gravel and Native Improved Rating System**

Data is collected on the following distresses and conditions:

- **Cross Section (Gravel, Native Improved only)** - Roadway built so that the center is higher than the shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage (Gravel, Native Improved only)** - Roadside ditches and culverts to handle water flow and prevent pooling on the roadside.
- **Corrugations (Washboarding)** - Small trenches or holes developing perpendicular to the roadway.
- **Potholes** - Holes or depressions in the roadway.
- **Rutting** - Depressions running parallel with the roadway, in the wheelpaths.
- **Dust** - Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only)** - Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

### **Rating Index Formula**

The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

## Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

### Asphalt

**Excellent** – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

**Good** – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

**Fair** - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

**Poor** - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

**Failed** - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

### Concrete

**Excellent** - New pavement. No maintenance required. RSL = 19-20 years

**Good** - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

**Fair** – Pavement has joint or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

**Poor** - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

**Failed** - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements)								
	FAILED	POOR		FAIR		GOOD		EXCELLENT
RSL Years	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20

### Gravel and Native

**Excellent** - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

**Good** - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

**Fair** - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

**Poor** - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

**Failed** - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent, good, fair, poor, and failed condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces)					
	FAILED	POOR	FAIR	GOOD	EXCELLENT
RSL Years	0	1-2	3-4	5-7	8-10